

# Employment Strategy Papers

## What is the effect of trade openness on wages?

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## **Acknowledgements**

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## Preface

This paper examines the effects of openness on wages in developing countries and developed economies separately using the ILO's October Inquiry data for wages. The findings suggest that in developing countries increased openness will not enhance wage rates directly although they may do so via growth, and may even produce (temporary) declines in real wage rates, as well as increase dispersions across wage rates. If openness generates economic growth it could allow some recovery of wages from the initial damage. However, it is quite clear that despite the positive effect of openness on growth, and that of growth on wages, the recovery from initial damage on the wage regime may not quite proceed in to full fledged enhancement of real wages in the developing world. While the explanation for the initial shock on real wages in the developing world may have something to do with sectoral demand shifts and their effects on wages, it may also importantly lie in the effect that increased openness has on inflation in the short run. On the other hand, in the developed world, wage earners in general will gain in the medium run with enhanced trade openness, and wage dispersions in these countries will not increase as a result. It is also likely that the explanation over here for the initial real wage declines due to openness may be more related to demand driven labour market adjustments, since the effect of openness, especially of FDI flows seems to be in lowering and not in increasing consumer prices. In short, the effects of openness on the wage regime are comparatively better in developed economies, even though in developing economies much of their adverseness, though serious, is of a temporary nature.

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## 1. Introduction

Under simplifying assumptions it can be argued that if trade barriers are reduced, countries will alter their product mixes to suit their comparative advantage in trade. This would imply an increase in the demand for skilled labour in developed economies and for unskilled labour in developing economies. Over the longer run, this basic model of international trade implies that open trade regimes should equalise factor prices across countries. Even with restrictions on the mobility of labour, it can be shown in theory that with capital mobility and free trade in goods and services the returns to labour tend to converge. While positions based on theory have been subject to challenges, it is only the increase in data access in the last two decades which has allowed the possibility of empirically testing propositions that can be extracted from trade theory at a general level. Given the political importance of present day debates on “globalization”, empirical findings on old expectations find a new space in international policy making as new building blocks for informed general expectations.

This paper is about the empirical relationship between open trade regimes and wages that can be observed in the world from the early 1980s to late 1990s – a period which has been characterised by policy debates on trade and its effects on living standards. The paper aims to examine the effects of some economic dimensions of globalization on wages in developed and developing economies respectively during this period. The main attempt here is an empirical one, which is to try and comprehensively describe the observed relationships that have obtained between wages and openness in a determinate period. Globalization is taken to be synonymous with “openness” and for this purpose the paper uses indicators of trade-GDP ratios and FDI-GDP ratios. The term greater openness is therefore used to indicate increases in trade/GDP ratios and the flows FDI/GDP ratios. The role of liberalisation policies that lead to changes in these indicators or other attendant policies that influence them is generally not addressed<sup>1</sup>. The indicators used here measure *realised openness*, which is a *result* of complex processes that include policies as only *one* element. Unless explicitly stated our concern in this paper is not with the issue of whether liberalisation policies have enhanced trade, or exports or output growth. The question we ask just concerns the relationship between *realised* changes in trade regime indicators and wages. In other words, what can we say about these relationships in a given period of recent history. It is also recognized for the purposes of this paper that there are important differences in coverage between developed and developing countries and that while the *bulk* of the labour market is “waged” in a formal sense and organized in developed

<sup>1</sup> This is an important qualification since liberalization policies may not always lead to higher trade. The relationship between policy and an outcome (e.g the trade GDP ratio) is a highly mediated relationship. While trade GDP ratios are sometimes considered proxies of openness policy, we take it to mean realized openness. Proxies for policy are difficult to construct. Moreover correlations between import tariff volumes and trade-GDP ratios show no relationship (Dollar and Kraay [2001]). There are two types of inferences that can be drawn from such findings, either policy indicators are noisy or policy on its own has little impact on trade outcome. Despite the difficulty of examining this question there is enough evidence to suggest that countries that have liberalized most have not always enhanced trade commensurately. See Agosin and Tussie, (1993) who were one of the earliest to argue that increasing export orientation in many developing countries when unaccompanied by reciprocal liberalization in developed countries can result in immiserizing growth; and Rodrik, (2000) for a later period argument on the non relationship. In section 4 we look at special groups that may capture policy.

economies, only *part* of the labour market is so in developing countries.<sup>2</sup> In the developing country case there is also a sizable unorganized or partially waged part of the labour market. These unorganized parts of the labour market use different mixes of contractual arrangements and many persons working in these parts have effective returns below or on poverty line wage levels<sup>3</sup>. The relationship between this part of the “labour market” and openness is not discussed here, but has been addressed elsewhere, and is also the subject of another work in progress<sup>4</sup>.

What happens to wages on the whole or differentials across wages, as a result of increased trade-GDP and FDI GDP ratios are open empirical questions, and even though this paper is empirically driven, it may be useful to broadly suggest what theory may imply about the relationship between openness and wages. If expectations are to be informed by basic economic theory then one way to characterise the effects of greater trade on wages would be to argue that the first effect of enhanced trade will be on the prices of products. Changes in the prices of products would alter sectoral profitabilities which in turn may affect wages. For example, import competition could lower product prices of those goods and services produced domestically but which face import competition. This process would lead to capital shifting to sectors with greater profit opportunities, in turn increasing labour demand in the sectors to which capital is moving. Opening trade flows can thus lead to changes in labour demand. More workers, it could be argued would then shift to newly profitable sectors from erstwhile profitable sectors. The magnitude and direction of the overall wage effect will depend upon the nature of this shift and the rigidity of the supply of the type of workers needed for activities in which more labour is now demanded. In the short run, it is perfectly possible that accompanying these shifts there are negative adjustments for the wage regime. However, if this process leads to enhanced growth, then there should be an effect of that growth back on aggregate demand, and then more generally on enhancing wages.

If we apply this general view to developed economies where labour supply can be assumed to be fixed, labour demand shifts could mean wage increases, as workers getting in to the required new jobs could command a higher premium in these more profitable sectors. Given retraining requirements and the sectors to which the moves take place, which in this case would be for higher skilled jobs, there would over time be a compositional change in occupational structure of employment as well as a higher overall level of wages. If this is happening in a period of independent economy-wide technical change as well, then the tendency would be accentuated. At least this would be the expectation.

<sup>2</sup> This is in some ways like assuming labour supply as relatively fixed in the shorter run in developed economies, and as relatively elastic in developing countries. It means that in these ideal abstract worlds for developed economies if there is a large growth effect of openness on well-being it would reveal itself in the labour market more as an adjustment through changes in wages as opposed to changes employment. By the same logic it would reveal itself more as an employment effect and less as a change in wages in developing economies.

<sup>3</sup> This does not mean that the non-poor do not exist in the unorganized parts of the labour market in developing countries, but rather that the poor are by definition unlikely to be in the organized parts. See Majid (2001) on the significance of the category of the working poor in developing countries, from an employment perspective.

<sup>4</sup> On the issue of the relationship between trade openness and poverty reduction, see for example Dollar and Kraay (2001), Bhagwati and Srinivasan (2002), Majid (2003); and Berg and Kruger (2003) which is the most comprehensive review on the topic available. In general the case for poverty reduction being a consequence of openness rests on whether openness generates growth. If it does then the results on cross-country growth and poverty reduction we have can be invoked to make the case. The point being made here is the poverty reduction effect is unlikely to be a first round trade sector employment driven one but a second round growth driven one.

On the other hand, in developing economies, the extent to which labour supply can be assumed to be fixed is debateable. So from one perspective, if we assume that there is dualism and an unlimited supply of labour and if demand increases as a result of openness for unskilled or less skilled workers then there will be more productive employment and a decline in underemployment but probably no increase in “wages”.<sup>5</sup> The reason is that the “wage regime” where most of the reported wage rates are to be found in the developing country context is assumed to cover the relatively organized and better off section of the work force and many poor workers largely fall outside the organized sectors. Since the number of job associated directly with trade openness may be limited, the mechanism through which a change of this kind could affect the lower end of the labour market is likely to be more mediated than direct, i.e. through the effects of openness on growth which would have economy wide wage effects. However if openness led growth effects are also limited, and further that the demand shifts which take place as a consequence of opening up are restricted, and the move is not toward lower but higher skilled jobs where the labour market may be tighter, then the immediate effect may also be an increase in wage dispersions.<sup>6</sup> Thus in developing countries we could expect some increases in wage dispersions as a consequence of openness, decreases in the incidence of the working poor and possibly some increase in wages due to trade led growth. If we expect growth in general to enhance inequality in developing countries then this may exacerbate wage rate dispersions further.

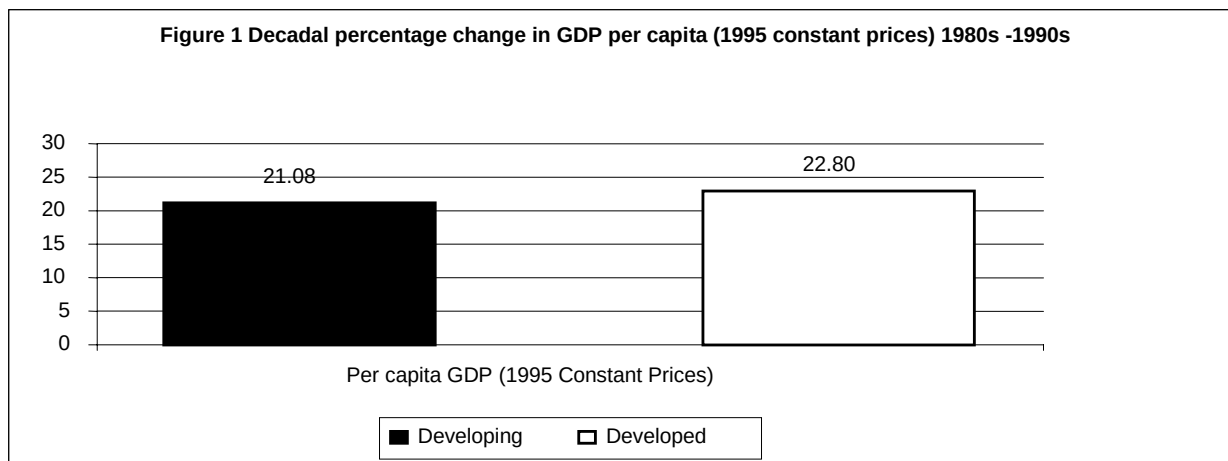
<sup>5</sup> The expectation that unskilled labour demand increases with greater trade openness is a stylised one, and essentially based on the idea that “labour intensive” exports will be boosted in developing countries as a result opening up. Empirical studies on the topic like the ones synthesized in the influential review by Kruger (1983) suggest this. The point to make in this regard is that the theoretical expectation of increased trade-GDP ratios enhancing demand for unskilled occupations may be subject to a definitional bias. While the demand for labour intensive products which require unskilled labour may be enhanced in developing countries with greater trade-GDP ratios, it is entirely possible that this increased demand is not for the most unskilled workers in the *domestic* context of the developing country, although this may be true in comparison to the developed economy skill average. Only in the case of agricultural crop exports, can such an expectation be sustained in the domestic context, since most manufactured or processed commodities involve relatively skilled workers in developing countries.

<sup>6</sup> It is well known that present day enhancement of trade in developing countries is driven by manufacturing exports that are likely to use skilled labour. It can be argued on the import side that the same policy packages that are associated with enhanced total trade may produce an environment in which imports are increased much more than the degree to which exports pick up, which could for example reflect a collapse in part of the domestic import competing industry that was previously protected, and subsequently faces external competition. In this case there could be a negative effect on skilled wages, since these collapsed industries are likely to have employed relatively skilled workers. On the other hand there is evidence at a country level that shows that foreign owned firms (FDI) pay higher wages than their domestic counterparts to equivalent workers see for example Lipsey and Sjöholm (2004) for an Indonesian case study. Moreover research by Feenstra and Hanson (1996, 1999) suggests that wages of skilled workers rise relative to unskilled workers as a consequence of outsourcing in both developed and developing economies.

## 2. Descriptive trends

The variables between which we seek to build systematic associations ought to be independently described in terms of basic patterns and time trends over the two decades. The aim of this descriptive section is to contextualise the relationships examined more systematically in the paper. Essentially we look at trends in broad indicators of income, trade openness and wages over the two decades of the 1980s and 1990s in developed and developing economies.

Real GDP per capita growth rates across decadal averages are fairly similar in developed and developing countries. Developing countries grew by around 21.07 per cent across the decades of the 1980s and 1990s and developed economies grew by 22.80 per cent. This equivalence actually disguises the differences in population growth rates, if these are taken in to account; developing country growth of national income has been higher, and within developing countries groups we would find winners and losers.<sup>7</sup>

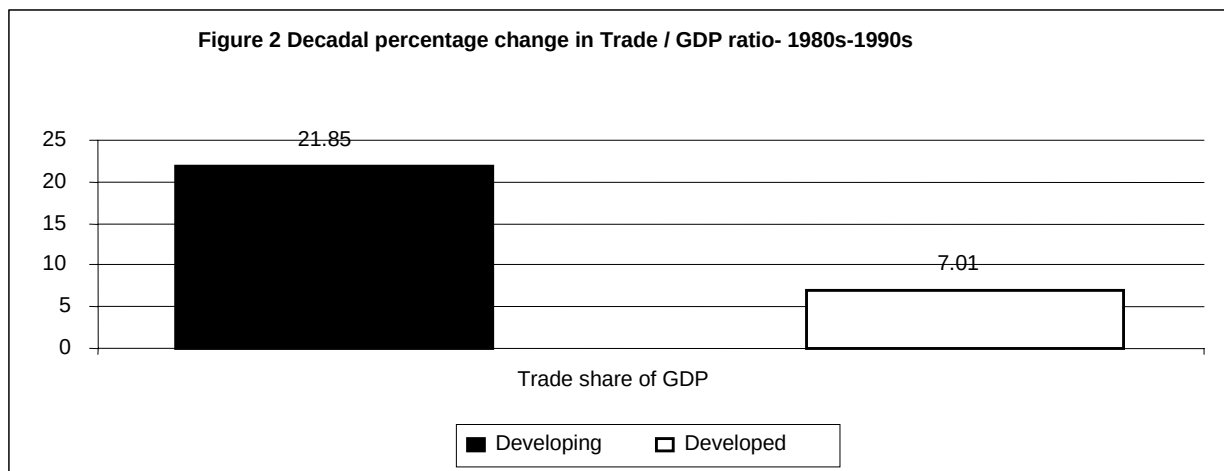


Source: Data is from WDI 2002. Throughout this paper, the developed and developing classification is based on the World Bank's income groups in the WDI. Low, lower, middle and upper middle countries are classified as developing, while high income countries are classified as developed.

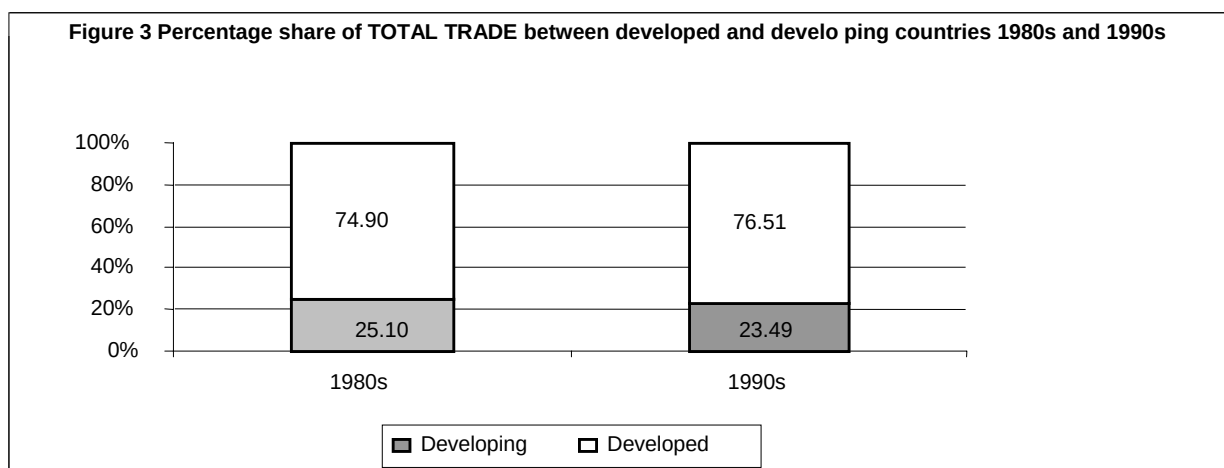
The share of trade in GDP is a measure of globalization in product markets. When we look at growth in trade-GDP ratios (Figure 2), we find that these have been higher in developing countries (21.85 per cent) than in developed economies (7.01 per cent) across the decades. However the relatively smaller growth in the trade-GDP ratio has many explanations. One is the larger size of the denominator in developed economies, and the other concerns the recent increases in non-traded service sectors in the national incomes of these economies. Never the less the decadal increase was sufficient for developed economies not only to maintain but to increase their share in total value of transactions in global trade from 74.9 per cent in the 1980s to 76.5 per cent in the 1990s. Therefore the increase of importance of trade in developing

<sup>7</sup> For a discussion of the polarisation process within developing countries see Majid (2003). The point about diversity in developing countries is not explored here. It is often and not incorrectly suggested that developing countries that have benefited from globalization are few in number, and regionally concentrated. However, these countries covered more than half the world's poor population in the 1980s. It is however worth noting that the countries that are in the successful group still have lower and not higher per capita incomes than the rest of the developing world.

countries (i.e. growth in the ratio of trade in GDP in developing countries) high as it is, has not lead to a decrease in the global share in trade for developed economies.

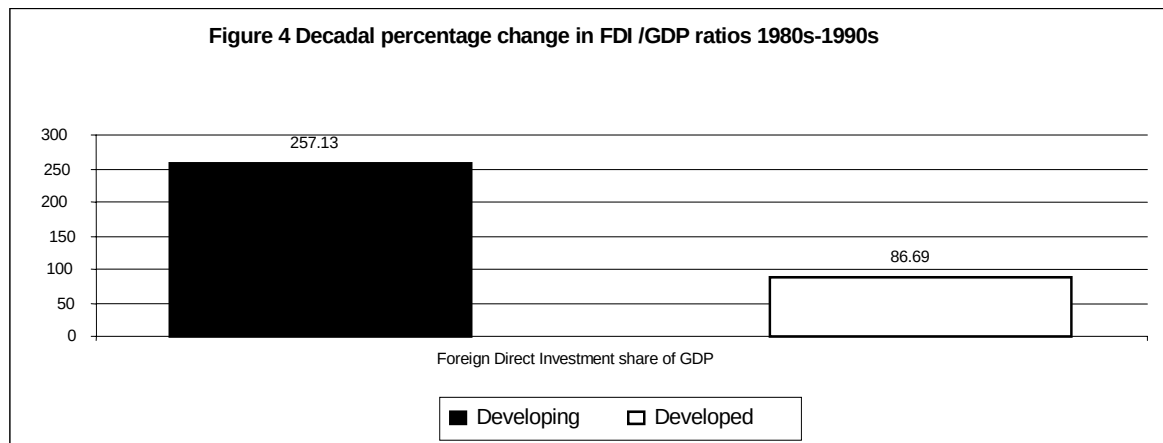


Source: Data is from WDI 2002.

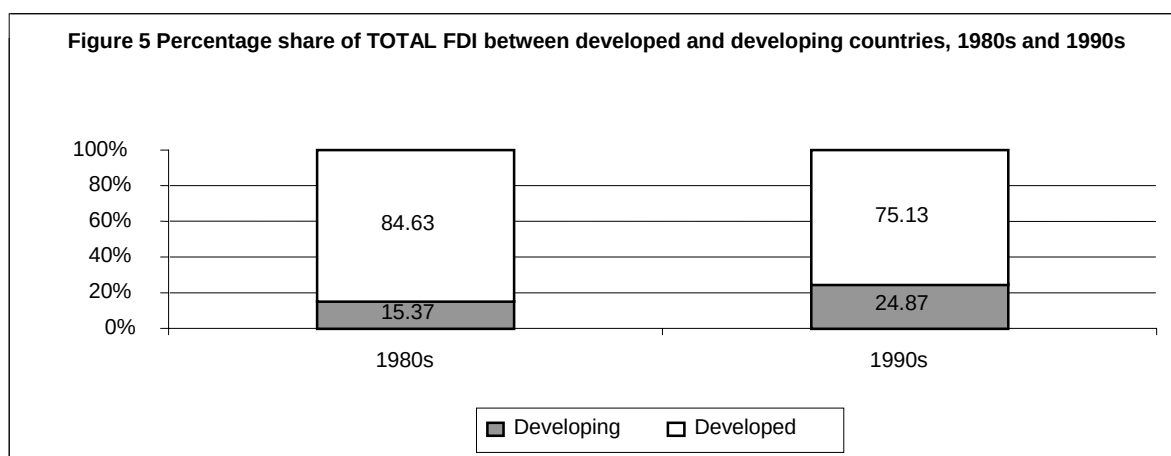


Source: Data is from WDI 2002.

When we look at FDI-GDP ratios (Figure 4) we find a massive increase in their growth for developing countries. The increase (257.12 per cent) is indeed massive despite the original low base level. The growth in developed economies (89.68 per cent) has also been substantive but clearly less so in comparison. We need to bear in mind the higher GDP levels in developed economies as well as relatively lower starting points in developing countries to have a perspective on the growth of this ratio across decadal averages. However, unlike the trade-GDP ratios, the growth in FDI-GDP ratios has been sufficiently high in the developing world so as to alter the global distribution of FDI (Figure 5). While the developed world still claims over two thirds of all FDI, developing countries have significantly *increased* their global share of FDI flows from 15.37 per cent in the 1980s to 24.87 per cent in the 1990s, alongside the increasing size of FDI inflows as a percentage of their national incomes.



Source: Data is from WDI 2002.

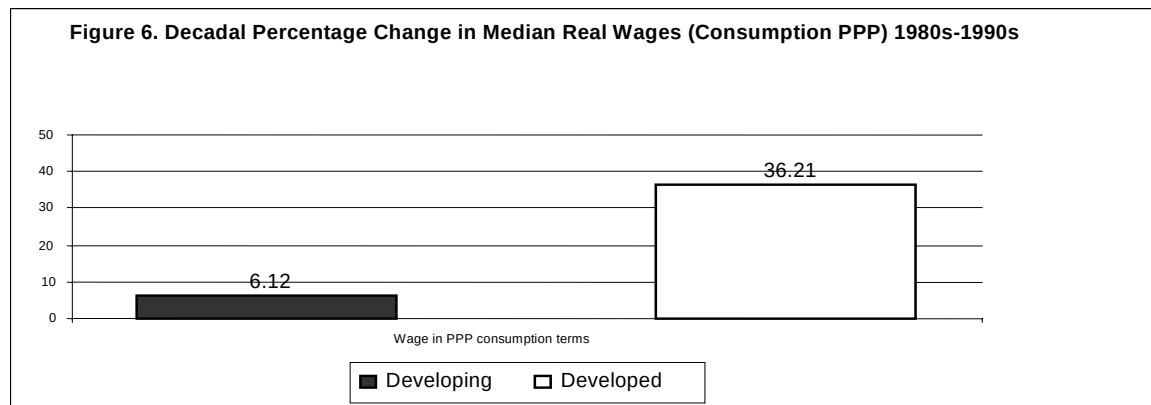


Source: Data is from WDI 2002.

Our period of study is one when real GDP per capita growth has been similar across developing and developed economies. In this period trade/GDP ratios have increased more in the developing world, but the developed economies have maintained their shares in total value of trade. FDI /GDP ratios on the other hand have grown dramatically in developing countries and they have altered the global distribution of total FDI between the developing and developed worlds. In both cases of trade and FDI, global shares for developing economies where *four-fifths* of the world's population live are still less than *one-third*. That globalization as measured by our trade regime indicators has taken place in developing countries is not in doubt, however it is the growth in FDI in developing countries that can be said to have, in some sense, taken place at the "expense" of the developed world.

We now turn to examining broad trends in the wage indicators. On a median measure of wages,<sup>8</sup> which we take as a summary first approximation, it is found that while wages have increased everywhere, they have done so much more in developed economies (36.20 per cent) than they have in developing countries (6.12 per cent) across the decades.

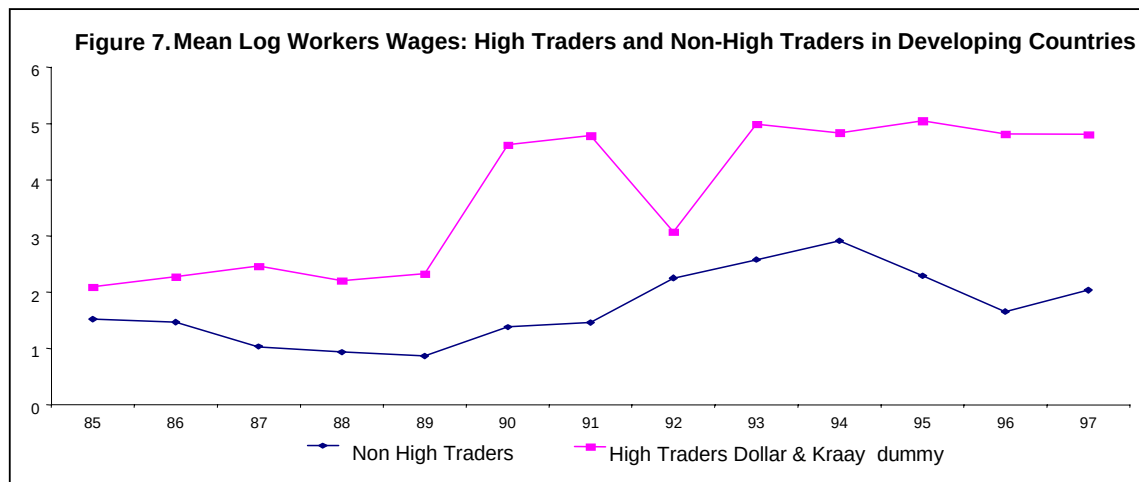
<sup>8</sup> In Figure 6, 1980s=1983-89; 1990s=1990-98. The decadal average changes are calculated in the following way. The first period representing the decade was chosen. For each year and country in that decade the median wage across all the reported occupations was selected. An average was then taken for the medians across the decade for each country. The median of these country specific medians across the countries in the group (e.g. world, developing, and developed) was then taken. The same procedure was repeated for the second decade. A growth rate was calculated between the two decadal averages.



Source: Data is from ILO October Inquiry.

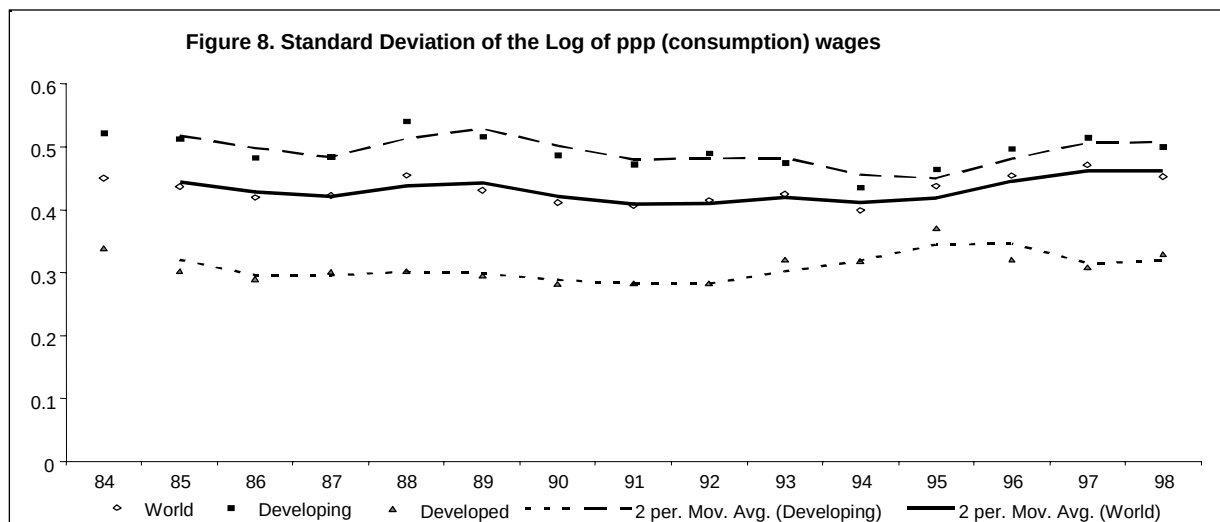
It may be also be useful to point out in the context of globalization that trade led growth in the developing world is unlikely to have taken place on the basis of “low wages” as such. ILO wage data shows (Figure 7) that the real wages of “workers” have shown a cyclical trend over the decades, which cannot be said to be a decline. Moreover in no instance are *workers’ wages* higher in those developing countries that have increased trade most compared to the rest of developing countries.<sup>9</sup> In an aggregative sense our expectation that small positive real wage trends dominate developing countries is valid, but the idea that expansion of trade that has happened in the developing world, has happened on the basis on “low wages” for those who have successfully enhanced trade is implausible. Developing countries which have expanded trade most have higher and not lower unskilled workers wages than those developing countries which have expanded trade less.

<sup>9</sup> In Figure 7, to calculate this measure of mean workers' wages, we take the log of ppp wages for any of the 8 workers occupations *on which data is available* in the ILO October Inquiry data set for each country in a country group classification (in this case: High Traders and Non High Traders in developing countries) in each given year. These classifications, discussed in detail later in the paper, are based on Dollar and Kraay (2001). For a given year the mean workers wage of countries in the group classification are multiplied by their respective population weights in that year. These population-weighted mean wages are then summed down vertically for countries in the group. This gives a single year specific *meta observation*, which can be seen as an index of a population-weighted mean of the log of ppp workers wage for the countries in the group. This index is generated for each year in the data set. The same set of common countries is kept for each year. Each meta observation on the chart represents an index, for a given year. It is based on the mean of the log of ppp *workers wages* (the eight “labourer” occupations in the data set) and the population weight of the country, for the countries in the group. The present chart has two-group classification: High Traders (20) and Non High Traders (64) in developing countries. While the represented countries in each meta-observation which is population adjusted are the same, the workers wages rates that go in to the construction of each country's mean workers wage are not. So for example the mean workers wage in 1984 for country A may be based on 5 workers occupation wage rates, while it may be based on 3 wage rates in 1985, and so on. No missing values are filled in to keep occupations the same for a given country across the years. Similarly for country B there is no restriction imposed that the wage rates used for it will be for the same occupations as country A in each year. No missing values are filled in to keep occupations the same for across countries in a given year. We use actual observations. Results on smoothed data are similar.



Source: Wage Data is from ILO October Inquiry.

The patterns in the dispersion of wage rates, nuances this story. Our indicator of wage dispersion (Figure 8) is the standard deviation of log of wages<sup>10</sup>. For developing countries this measure suggests wage rate dispersions have increased on trend in the late 1990s. These increases in wage dispersions are not inconsistent with country level findings in many developing countries of increases in relative wages of skilled workers. Similarly in developed countries we find an increase in wage dispersions on trend from the early 1990s.



Source: Data is from ILO October Inquiry.

Note: 2-per. Mov. Avg. are two period moving averages.

In summary, we have found that per capita output growth has been similar in developed and developing countries in the period, although growth in national income as such is higher in developing countries since population growth is also much higher in this group. While growth in

<sup>10</sup> The dispersion chart in Figure 8 plots the standard deviation of the log of mean wages. This measure is calculated in the following way. In each country and year, we first transform all available wages on occupations in to logs. We then compute the standard deviation across these logs of wages within a country for every year. So the standard deviation is calculated horizontally across the wages rates in a country in a year. These standard deviations are then summed for each year for countries in each group and an average is taken. The exercise is repeated for all the years. The countries are kept common over time.

trade–GDP ratios has been higher in developing countries, the distribution of the value of trade across the two worlds has remained the same. In contrast, the growth in FDI has also been much faster in developing countries and their share in total FDI has increased. We have also found that wages have only increased slowly in developing countries though wage inequalities may have grown. In contrast wages have significantly increased in developed economies while dispersion in wage rates has also done so.

The question that we explore in this paper is whether the aggregate patterns observed in wages in the developed and the developing worlds can in any meaningful way be associated with changing trade regimes as captured by trade and FDI indicators. The rest of the paper is organized to answer this question empirically. In the next section the data used in the paper is discussed. In two sections following that, we look at the effects of trade and FDI on wage levels and wage dispersions respectively. We then go on to examine the impact of openness indicators on growth itself, since that is arguably the central mechanism through which wage are likely to be enhanced through trade, at least in the developing world. Lastly we explore a common finding between developed and developing countries that requires additional explanations. The results are then drawn together in the concluding section.

### 3. Data

While wages are critical to analyse with respect any analysis of well-being in modern economies, the empirical problems that one typically encounters in looking at wage data, especially in developing countries, are related to not having proper employment statistics associated with wage rates. Since it is possible to get wage rates specific to certain types of occupations and their associated employment in particular firms or sectors for country cases, a firm or sector level analysis for a country that examines the quantity as well as the price of labour is more possible to conduct. It allows us, for example, to focus on a trade affected sector in a country and study its wage and employment implications.<sup>11</sup> However the extent to which wages examined in such country sector studies are representative of “wages” in general or even their generic skill type in the economy is uncertain. But that is precisely what we need to have in order to draw any welfare implications from such an analysis of wages.<sup>12</sup> It is also difficult to find representative wages for broad skill types whose weights in terms of employment in the economy are known. An average (or median) of unweighted wage rates is also not easy to justify, other than as a summary measure, as being representative of the price of “labour”, although this is often done. Clearly if we have a large enough set of occupations on which wage data exists and if we utilise the “entire” wage information available appropriately, then it is better than using “average” wage rates even though problems with lack of employment data remain. It is also the case that statistics on wage rates generally, and quite understandably, cover organized parts of economies. Therefore in developing countries these tend to exclude unorganized sections of the labour force where the bulk of poor workers exist.<sup>13</sup> By implication

<sup>11</sup> For example this could be an export industry, or a previously import substituting industry facing competition due to reduced trade barriers.

<sup>12</sup> Otherwise the analysis is reduced to a sector specific one often covering manufacturing wages which are not the dominant form of wage employment in any developing economy and may not necessarily move with other wage rates in the economy in the same direction.

<sup>13</sup> See Majid (2001) on estimates of the working poor in developing countries. This exclusion of the poor from wage data is unlikely to obtain for developed country data where the potentially poor (in an internationally comparable and absolute sense do not exist, and the unemployed who non-poor in that absolute international sense are protected by social insurance and most of the functioning economy is organized. Consequently, this typical limitation concerning incompleteness in using any pure wage data set insofar as it for developing countries must be borne in mind.

pure wage rate data sets are also likely to be biased in favour of relatively skilled occupations *within* a developing country context. On the other hand, as suggested, in a developed economy a comprehensive pure wage data set is likely to cover the bulk of the economy. Therefore while the problem of a lack of employment statistics to match wage rates still exists in the developed economy context, there is less of a problem of incompleteness here, as is found in data sets for developing economies

With all the above qualifications, it is assumed here that examining pure wage data even without employment statistics- in relation to the opening up of economies- still has implications for welfare. The wage data used in this paper is from the International Labour Organization's October Inquiry covering the period of 1983 to 1998. These wage rates cover an array of sectors and a vast number of occupations. The entire set of available wage rates ( $W$ ) is taken to represent what we call the "wage regime". In so far as the ILO wage data is concerned it has been subjected to some transformations. The nominal wage data set was first cleaned and transformed for the ILO by Freeman and Ossendorp (2000) to give monthly wages in national currencies. We have further transformed this data to PPP consumption dollars. This transformation is based on Summers and Heston, PWT 6.1. In our view the transformation of wages by consumption ppps is more appropriate than transforming by general ppps.

For the purposes of some of the regression analysis involving wages many variables including the wage data have been further transformed to bring their distributional characteristics closer to normal distributions. We have found this procedure to have more desirable characteristics than the usual practice of logging the data. These are referred to as *x-transformations*. The purpose of these transformations was to try and normalise the distributions of the variables we were using. Essentially we examined the distribution of each variable that we intended to use in the analysis by examining its skewness and kurtosis statistics and then subjected the series to a transformation by selecting a factor that would bring it closer to a normal distribution. We then compared our transformation to the original values and the transformation of the variable by taking logs.<sup>14</sup>

We take two indicators to represent trade openness: these are the trade-GDP ratio ( $T$ )<sup>15</sup> and FDI-GDP ratio ( $F$ ).<sup>16</sup> The national income indicator which is taken to proxy growth in a later part of the paper is the real gross domestic product per capita ( $G$ ).<sup>17</sup> Institutional indicators used for union density ( $UD$ ) are based on work done for the ILO by Viser (2000); the Freedom of Association and Collective Bargaining (FACBW) index is due to Kucera (2004); and the Civil liberties index (FHCL) is the one developed by Freedom House (2004). The Consumer Price Index (CPI) is taken from the World Development Indicators (2002).

<sup>14</sup> Details of the statistical results that justify the x-transformations in comparison to logs on the basis of "before" and "after" skewness and kurtosis statistics may be separately requested from the author.

<sup>15</sup>  $T$ =Trade/GDP ratio referred to as trade in the text is the sum of exports and imports of goods and services measured as a share of gross domestic product. See World Bank (2002).

<sup>16</sup>  $F$ = FDI/ GDP ratio is referred to as FDI in the text, which are net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series for each country shows net inflows in the reporting economy. See World Bank (2002).

<sup>17</sup>  $G$  = Real per capita GDP (constant 1995 US\$). GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 1995 U.S. dollars. Dollar figures for GDP are converted from domestic currencies using 1995 official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used. See World Bank (2002).

#### 4. The effect of trade and FDI flows on wages

In order to assess the relationships we first employ a fixed effects dynamic adjustment model which has been used by Freeman, Oosendorp and Rama (2001) and reported in World Bank (2002) and Rama (2003). The model looks at the wage effects of trade openness controlling for foreign direct investment and vice versa. The model is best used for capturing the statistical significance of coefficients on T and F as opposed to developing an explanation of what determines wage rates as such. The first set of relationships examined is between W, T and F. The set of six equations for the estimation are the following:

$$W_o = C + b_o T + \hat{b}_o F - (5.1);$$

$$W_o = C + b_1 T + \hat{b}_1 F - (5.2);$$

$$W_o = C + b_2 T + \hat{b}_2 F - (5.3);$$

$$W_o = C + b_3 T + \hat{b}_3 F - (5.4);$$

$$W_o = C + b_4 T + \hat{b}_4 F - (5.5);$$

$$W_o = C + b_5 T + \hat{b}_5 F - (5.6).$$

Where W is the vector of *x-transformed* wage rates, C is the constant T is the *x-transformed* trade-GDP ratio and F is the *x-transformed* FDI-GDP ratio. There is one observation per country occupation and year. Subscripts signify periods, where 0 is the current period and 1 2 3 4 5 are period lags. So, for example, in equation (5.4) :  $W_o = C + b_3 T + \hat{b}_3 F$ ,  $b_3$  represents the effect on present wages, of T lagged by three years controlling for the similarly lagged F; and  $\hat{b}_3$  the effect on present wages of F also lagged by three years controlling for a similarly lagged T. Diagrams show coefficients on T and F over the time lags. This allows us to plot the effects of T and F on W in the same year, after one year, after two years and so on until after the fifth year. It is important to emphasise that this sort of model is descriptive in the sense that it only indicates, though comprehensively, the association in the data set of changes in T and F and “all” available wage rates over space and time. It says little about the mechanisms through which changes in T and F bring about changes in the wage regime. Our initial comparisons are based on looking at world as well as developing and developed economies separately.<sup>18</sup>

It is important to note what the coefficients imply. A negative and significant coefficient on say T, would suggest that there is a preponderance of declining wage rates across the whole set of wage rates on which we have observations, with respect to increasing T. It does not tell us whose wages are declining. The assumption is that if more wage rates are seen to be declining “systematically” using all the wage information in relation to changes in T, then one can say that the labour market adjusts negatively. Similarly a positive coefficient would suggest a preponderance of systematic increases in the whole spectrum of wage rates.

<sup>18</sup> A similar exercise to the one captured by Figure 10 in this paper, has been reported by Rama (2001, 2003) and World Bank (2002) based on *work in progress* by Freeman, Oostendorp and Rama (2001). There are differences between the present exercise and the aforementioned ones in important respects. Firstly while we have transformed the wages by consumption ppps, and subjected these series to further adjustments to normalise distributions, the other authors have done transformations by general ppps. Moreover in comparison to Rama (2001, 2003) which reports the all country global results, we find that our results are similar with respect to T, but dissimilar with respect to F. We do not find, like them, that FDI initially has a positive effect on wages that becomes negligible over time. We have found important differences within the global picture itself between developing and developed countries.

At the world level we find that the initial effect of increased openness on the wage regime is a negative downward adjustment which progressively lessens over time and turns positive offsetting the initial negative shock in around four years. The initial effect of an increased FDI share in GDP on wages is a much smaller negative one which also diminishes, offsetting itself over time. Therefore while the short run effects of both indicators are negative, over time they tend to neutralise themselves and the trade effects go in the positive zone.

We can justify the initial negative adjustment period in various ways although that is subject to a longer discussion in a later part of the paper. In general a temporary negative shock can be associated with the period of adjustment to changed labour demand. In developing countries in particular it may also be due to the fact that alongside liberalisation, other reforms often take place in which while both public and private jobs are lost, and sometimes private sector jobs are gained. We take no explicit view on what determines wage levels, except that given wage rates, demand and supply constraints may influence changes in wage rates. These results suggest that the negative shocks of openness on the wage regime are *temporary*, and wages tend to recover within three to four years, then possibly improving further in to the positive zone. This in fact comes closest to the view from the World Bank (World Bank, 2002a) on the general effect of openness on wages.<sup>19</sup> What this period of adjustment from the first negative shock to recovery represents is a possible transition that involves a reallocation of labour across activities. Apart from the issue of how this adjustment takes place, it is important to ascertain if this pattern observable at the world level is in fact applicable as a characterisation to “parts” of the world, and if there are differences between developed and developing economies that are masked by a global result.

When we look at the case of developed economies<sup>20</sup> we find that the effect of trade openness on wages though still producing a negative initial shock turns positive by the third year and continues to proceed in that direction in a clear manner. The effect of FDI on wages is a much smaller negative shock that becomes negligible over time.<sup>21</sup> In the shorter run the effects of increased trade as well as FDI are negative. Over time the effect of trade openness turns positive dominating the negligible FDI effect. The positive effect in later years which was found to be less in magnitude and much weaker in significance at the world level is much more pronounced in developed countries. The implication is that the global picture understates the positive effect in later years, i.e. the recovery, for developed economies.

When we look at developing countries<sup>22</sup> we find that the initial effect of an increase in openness on wages is also a negative shock which may turn slightly positive or at least show recovery over time. By contrast, the FDI effect on wages is negative which over time diminishes to zero then turning a little positive. The recovery periods are also similar as at the global level. The story of developing countries therefore is similar though less positive in later years than the developed economies. One can argue that the impact of enhanced trade regimes on wage rates is found to be negative in the short run everywhere, in both developed and developing economies.

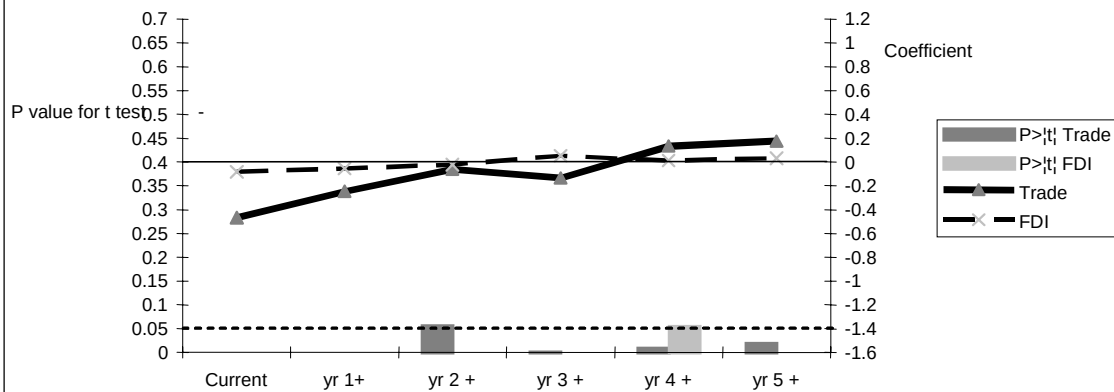
<sup>19</sup> The influential World Bank report of 2002 *Globalization, Poverty and Growth*, based on Bank research and produced by P. Collier and D. Dollar, under the supervision of its Chief Economist N. Stern, states on page 104: “In the long run integrating with the world economy raises wages.” We need to note that this is a policy research report and does not reflect the view of the Bank’s Board and representative governments.

<sup>20</sup> These are all high income countries by the World Bank classification World Bank (2002).

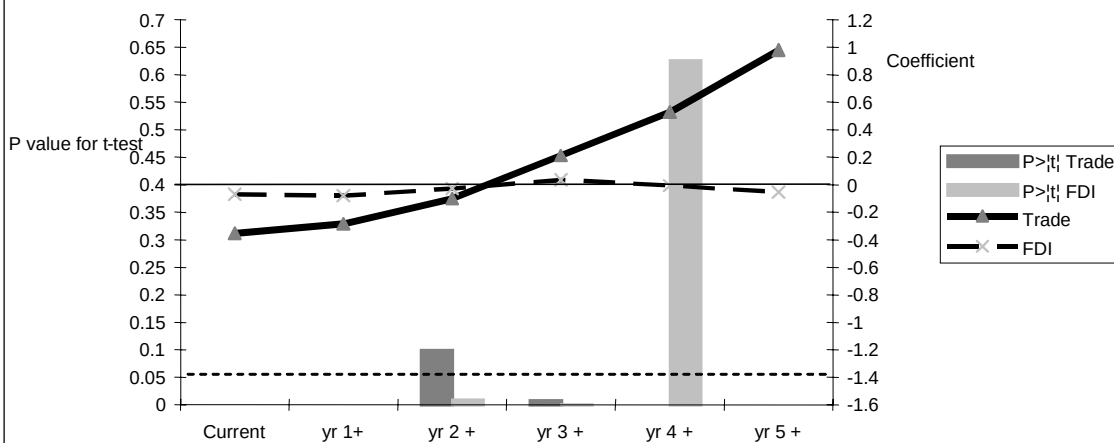
<sup>21</sup> This results needs to be probed further. However given that in the fourth year the coefficient is not significant and only in the fifth year very marginally negative that it is better to interpret it as non effect in the longer run. Given certain types of investment can only take place in developed economies because the minimum necessary institutional and structural conditions obtain there, it may well be the case that FDI within the developed world is attracted to those developed economies with relatively lower wages. In contrast in developing countries there is an understandable slight positive effect of FDI over time, since FDI is known to pay higher wages than equivalent domestic employers.

<sup>22</sup> These are all non high income countries according to the World Bank classification, World Bank (2002).

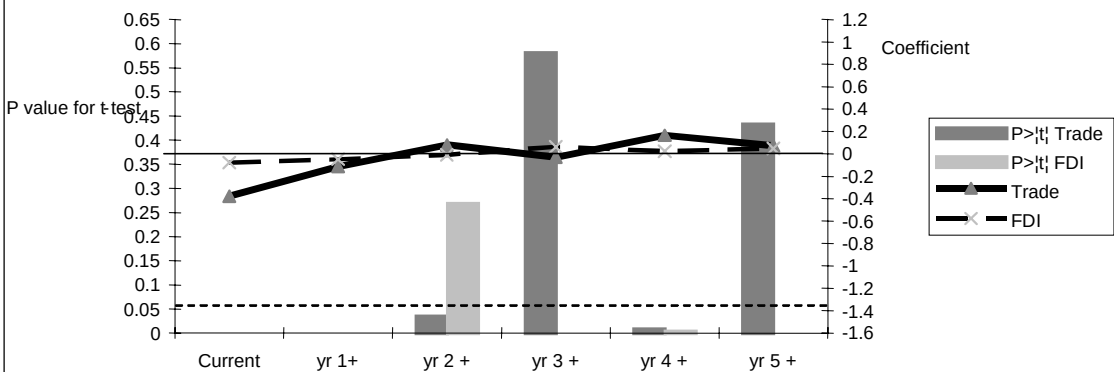
**Figure 9. Coefficients on T and F with respect to W over time**  
[World]



**Figure 10. Coefficients on T and F with respect to W over time**  
[Developed countries]



**Figure 11. Coefficients on T and F with respect to W over time**  
[Developing countries]



Note: The left hand y axis shows the significance of the t-test on the coefficient. Shaded bars display the significance (read from the left hand y-axis where the 5 per cent level is marked as a horizontal dashed line) on the T and F coefficients respectively for the current and subsequent years represented by the x-axis. So bars above this dotted line represent the non significance of the coefficient. The value of the coefficients is represented by the right hand side of the y-axis. This applies to the remaining figures as well. Details of each regression are not presented but available upon request from the author.

The labour market initially bears the negative adjustment from changing T and F, but this negative effect is temporary everywhere. It is also clear that the positive effect in later years is less in developing countries in comparison to developed economies. In terms of formulating “stylised facts” for policy discussion some results are important to emphasise. *First*, while the negative effects on wage regimes on average are likely to be temporary and common across all countries, it is the ability to withstand these negative effects that is at issue in a policy context and the developing world requires a special focus in this regard. *Secondly*, the longer run benefits of trade on the wage regime are much more pronounced in developed economies compared to developing economies. *Third*, the important wage effect is that of realized trade openness as opposed to that of changing flows of FDI in national income. This is also interesting because what we have seen in an earlier section (in Figures 4 and 5) is that it is the growth of FDI/GDP ratios in developing countries that has altered the division of FDI shares in the world.

Since there are indications that after the initial negative shock and recovery, there may be some enhancement of wages over time even in developing countries, we examine specific sub groups within developing economies to see if the pattern is specific to a particular “type” of developing economy. It is useful to examine purposively selected sub-groups here because there is a much greater diversity of initial institutional and structural conditions in the developing world than in the developed world. Three such groups are selected. The criteria of selection are trade and openness based and these have been developed and used by other researchers.

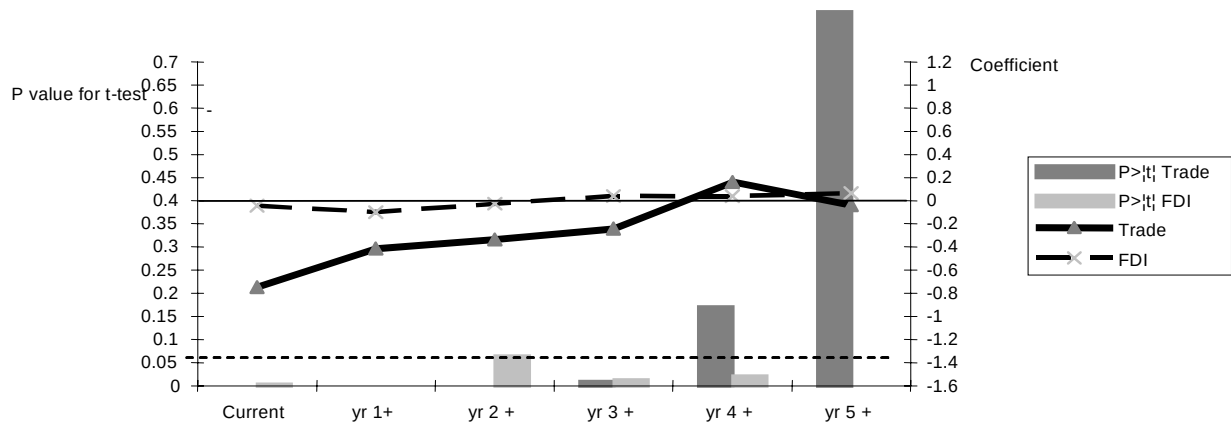
The first developing country group classification is of “High Traders”. This list is based on a group of countries that have experienced the greatest increases in trade-GDP ratios,<sup>23</sup> and it has been used in the literature as a proxy of trade-openness. Despite limitations, the list is supposed to capture countries that can be considered as having participated more in the globalization process. The High Trader group of developing countries does show an improving trend after the initial negative shock on wages, but while the trend does suggest wages moving in a direction of recovery, the coefficient after the third year is not significant. The FDI effects are small, initially negative and gradually improving and becoming positive. So what we find is that the developing country trend, captured by the group of countries that have realized the greatest increases in trade-GDP ratios is at best one of potentially offsetting the negative effect.

The second classification of developing countries is of “High Tariff Reducers”.<sup>24</sup> This category is supposed to capture developing countries that reduced tariffs most in the post-1980s globalization period. In a sense the indicator captures those countries that went for *all-out* liberalisation of their economies, and abstracts from whether or not they were able to enhance trade. The group of High Tariff Reducers show that increased trade-GDP ratios have a temporary positive effect (after a lag of a couple of years) which then proceeds to decline in the negative zone. In other words – in those developing countries which reduced tariffs most – the effect of increased trade-GDP ratios on wages is not necessarily a beneficial one over time. On the other hand these countries do show a small positive trend in the FDI effect on wages after two years. The net effect of worsening wages is likely to dominate.

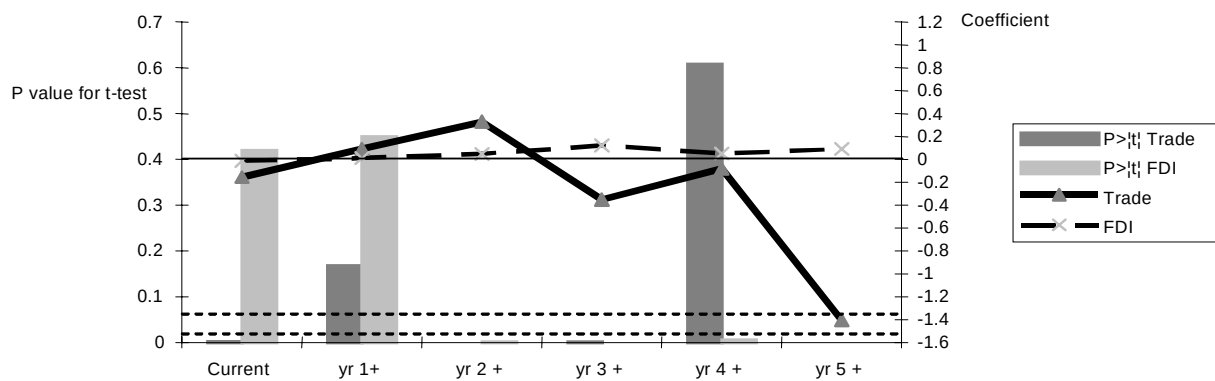
<sup>23</sup> Dollar and Kraay (2001) identify 24 countries (that we call high-traders) that increased trade most. The countries increased trade/GDP ratios, specifically between 1975 -1979 and the 1995-1997 periods. The trade part of the trade/GDP ratio includes both exports and imports. These developing world countries in the full list are: Argentina, Bangladesh, Brazil, China, Columbia, Costa Rica, Dominican Republic, Haiti, Hungary, India, Cote d’Ivoire, Jamaica, Jordan, Malaysia, Mali, Mexico, Nepal, Nicaragua, Paraguay, Philippines, Rwanda, Thailand, Uruguay, and Zimbabwe. The indicator tells us little about whether the increase in trade GDP ratio is a necessarily related to liberalisation policy. Countries that may not have liberalised too much may still have increased trade GDP ratios considerably.

<sup>24</sup> We use a list due to Dollar and Kraay (2001) of countries that can be classified as highest reducers of tariffs. These are Argentina, Bangladesh, Benin, Brazil, Burkina Faso, Cameroon, Central African Republic, China, Columbia, Dominica, Ecuador, Egypt, Ethiopia, India, Indonesia, Kenya, Nicaragua, Pakistan, Peru, Thailand, Uganda, Uruguay, Venezuela, Zambia.

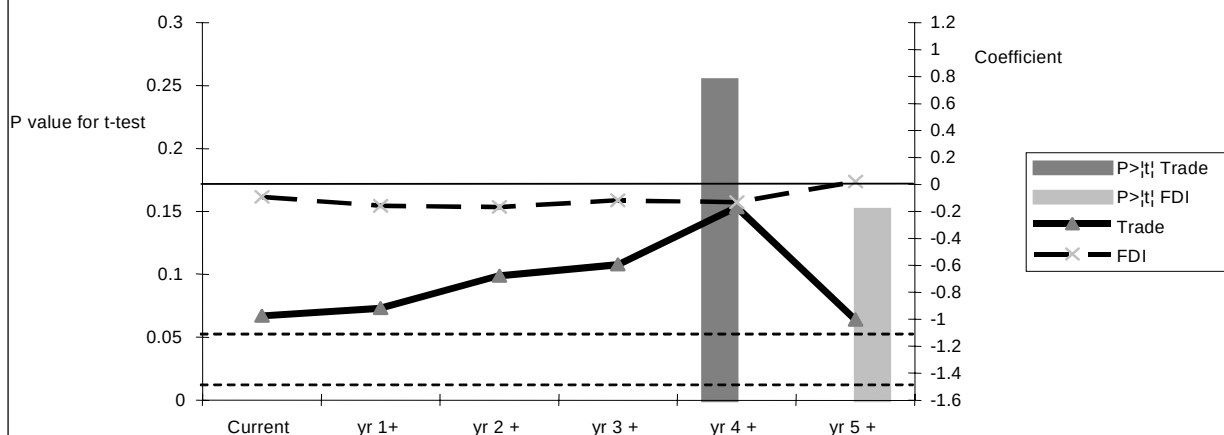
**Figure 12. Coefficients on T and F with respect to W over time**  
[Developing countries: High Traders]



**Figure 13. Coefficients on T and F with respect to W over time**  
[Developing countries: Dollar & Kraay High Tariff Reducers]



**Figure 14. Coefficients on T and F with respect to W over time**  
[Developing countries: High Importing Tariff Reducers]



Note: The left hand y axis shows the significance of the t-test on the coefficient. Shaded bars display the significance (read from the left hand y-axis where the 5 per cent level is marked as a horizontal dashed line) on the T and F coefficients respectively for the current and subsequent years represented by the x-axis. So bars above this dotted line represent the non-significance of the coefficient. The value of the coefficients is represented by the right hand side of the y-axis. Details of each FE regression whose coefficients are plotted are not presented but available upon request from the author. Since we have a large number of observations, these fixed effects control for country and year effects.

The third group we choose is of those developing countries that not only reduced tariffs most but maximised the increase of imports as well.<sup>25</sup> This is of course not to say that the list excludes countries that did not increase exports too, but this was not the criterion of selection. Moreover high import increases in conditions of maximal tariff reduction can also suggest a collapse on the part of the domestic industry that is unable to compete with imports. The intersection of greatest increasers of import shares in GDP *and* the greatest tariff reducers is likely to capture some of those countries that were unable to increase exports commensurately with imports and parts of whose domestic industry may have been unable to compete with imports post tariff reduction. Therefore this group is based on a classification that has a greater chance of capturing downsides of opening up. We find that this group of High Importing Tariff Reducers shows negative effects that do not get offset. The general effect of increased openness and increased FDI remain in the negative zone for this group.

The general picture of developing countries was one in which the negative wage effects of increased T and F ratios may get neutralised over time, with a possibility that these may even increase in later years. It is important to remind ourselves that these coefficient plots over time do not imply anything about the mechanism of shifts in wages, only that associations in the period under study have moved in this way. Given the diversity of structural and institutional conditions in developing countries we tried to look at special groups within this category. In this analysis we chose classifications to include some policy dimensions explicitly. We examined special sub-groups of developing countries that may capture the possible upside (High Traders), the pure policy dimension (High Tariff Reducers) and the possible downside of globalization (High Importing Tariff Reducers). In the case of High Traders the general developing country pattern from negative shock towards neutralisation may be valid. In other cases even this is doubtful. We find that the possibility of neutralising initial negative wage effects of increased T ratios over time may exist more for those developing countries that managed to enhance these ratios most. This is not the case for those who slashed tariffs most hoping to enhance trade-GDP ratios. Here the effects are negative. In neither case can we say that the overall effects on the wage regime are an improvement in the medium run, and only in the best case can we suggest that there may be a process of neutralisation of the negative effect over time. Those who slashed tariffs and ended up increasing imports most, show negative wage effects over time.

On balance in developing countries there is wage damage associated openness that is possibly offset over time in the best cases. Since liberalisation policy in itself is no guarantee of enhancing trade, there is no substantive case to be made for wages in general being enhanced in the groups that are classified using the tariff reduction criterion. While the cause of initial negative effects is discussed in detail in later sections, the mechanism through which recovery takes place in developing countries is likely to be growth.<sup>26</sup>

The preceding discussion on graphs was based on a dynamic panel analysis that plotted fixed effects regression coefficients on T controlling for F; and on F controlling for T over time lags. The national income effect was not separated out. We now look at fixed effects regressions that use more controls. Summary results are presented in Table I. These are based on Tables 1a and 1b in Annex.

<sup>25</sup> The list due to Rodrik (2000) who using the same data set as Dollar and Kraay takes the top 40 countries in terms of greatest proportionate reductions in tariffs and the largest proportionate increases in imports /GDP, over the period of 1980-84 to 1995-97, and selects countries that make it to both lists. The list comprises of Argentina, Brazil, Columbia, Haiti, Hungary, Jamaica, Korea, Morocco, Mexico, Mauritius, Malaysia, Nepal, Paraguay, Philippines, Sierra Leone, Thailand and Uruguay.

<sup>26</sup> In other words, increased openness could alter relative prices which would start the process of sectoral shifts, which in the short run could damage wages but over time also enhance growth which in turn could increase overall demand and have some feed back positive effects on the wage regime. This is an issue we return to in a later section, since it is important to examine whether realized openness is in fact associated with growth

**Table I. Summary findings on level of wages**

## All Countries Regression Coefficients on variables explaining level of wages

|        | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade | 5             | –    | –             | 2    | 7                                         |       | 5/7  |
| Xfdi   | 3             | 2    | –             | 1    | 7                                         | –     | 3/7  |
| Xrgdp  | –             | –    | 8             | –    | 8                                         | 8/8   | /8   |

## All Countries Regression Coefficients on lagged variables explaining level of wages

|             | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade(lag) | –             | 1    | 4             | 2    | 7                                         | 4/7   | –    |
| Xfdi(lag)   | 2             | 3    |               | 2    | 7                                         | –     | 2/7  |
| Xrgdp(lag)  | –             | –    | 8             | –    | 8                                         | 8/8   | –    |

## Developing Countries Regression Coefficients on variables explaining level of wages

|        | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade | 5             | –    | –             | 2    | 7                                         | –     | 5/7  |
| Xfdi   | 1             | 2    | 1             | 3    | 7                                         | 1/7   | 1/7  |
| Xrgdp  | –             | –    | 8             | –    | 8                                         | 8/8   | –    |

## Developing Countries Regression Coefficients on lagged variables explaining level of wages

|             | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade(lag) | 1             | 1    | 1             | 4    | 7                                         | 1/7   | 1/7  |
| Xfdi(lag)   | 3             | 1    | 1             | 2    | 7                                         | 1/7   | 3/7  |
| Xrgdp(lag)  | –             | –    | 8             | –    | 8                                         | 8/8   | –    |

## Developed Countries Regression Coefficients on variables explaining level of wages

|        | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade | 3             | 3    | –             | 1    | 7                                         | 1/7   | 3/7  |
| Xfdi   | 7             | –    | –             | –    | 7                                         | –     | 7/7  |
| Xrgdp  | –             | –    | 8             | –    | 8                                         | 8/8   | –    |

## Developed Countries Regression Coefficients on lagged variables explaining level of wages

|             | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade(lag) | –             | –    | 5             | 2    | 7                                         | 5/7   | –    |
| Xfdi(lag)   | 7             | –    | –             | –    | 7                                         | –     | 7/7  |
| Xrgdp(lag)  | –             | –    | 8             | –    | 8                                         | 8/8   | –    |

Source : Tables 1a and 1b in Annex

Table I's summary suggests that at the all country level trade effects on wages are dominantly negative which turn positive over time. FDI effects remain weakly negative, and RGDP effects are always positive. Developing country results suggest a dominant negative effect of trade on wages which tends to remain negative but is less so over time. The FDI effect is mixed though often negative, and RGDP effect is always a positive one for wages. For developed economies the initial negative effect of trade on wages is mixed to start with, but turns clearly positive over time. FDI effects on wages are dominantly negative, and the RGDP effect is always positive. The asymmetries hidden at a global level between developing countries and the

developed ones pertain to trade where the positive effect over time is much clearer for developed economies, and to the negative effect of FDI on wages which is more pronounced in developed economies.

Table 1a presents the fixed effects regression results systematically. Pure effects of T on wages are negative just as those of F on wages (Regressions 1, 2, 3 and 4, 5, 6). This confirms the case for downward wage adjustments that was found earlier. The pure effect of RGDP on wages is systematically and significantly positive everywhere (Regressions 7, 8, 9), which is something we ought to expect. Therefore it would seem that while pure effects of T and F may be to depress wages but when they result in growth there would be some redress. It is well known for cross sectional analysis that we cannot exclude the possibility of other absent or omitted variables as being responsible for the observed relationships, for this purpose it is important to control for RGDP to see if these effects remain. When the model is controlled for RGDP we get an interesting change in results (Regressions 10, 11, 12) – the effect of T on wages in developing countries is still negative but in developed countries becomes positive. Thus the dynamic picture that suggested a distinct improvement in the wage regime for developed economies over time, on the one hand, and some long run downward adjustment or only a small improvement for the developing world is consistent with these results. F controlled by RGDP on the other hand (Regressions 13, 14, 15) shows a significant negative effect on wages in the developed world only. When T, F, and RGDP are taken together as independent variables in what can be called the “standard equation”, they give expected results (Regression 16, 17, 18). The negative relation of T with wages comes through significantly for developing countries only. The negative coefficient of F is however only significant for the developed world.

We next introduce selected institutional controls, one by one, that can be construed to have something to with the functioning of the labour market in order to see what influence the conditions represented by these indicators cast on wages in general, *given* the extent of globalization (T and F) and economic development (RGDP, real national income per capita). This is an important proviso to bear in mind. It is well known that many social indicators are themselves related to economic development and growth. While there are arguments to be made for feedback effects, the historical evidence suggests that the longer run causality runs from income growth to improved social indices. A few things are therefore important to do. First samples in cross sections must be split into developed and developing countries to reduce the likelihood of a relationship coming through due to the spread of income levels. Second, national income must itself be controlled for. We first look at the effect of unionisation rates on wages (Regressions 19, 20, 21). The indicator UD (union density) is due to work by Visser (Visser, 2000) done for the ILO. We seem to get a counter intuitive result and find that union density has a negative relationship with wages. The index is calculated as a percentage of unionised persons in the employed labour force. We have to be careful in interpreting this result since in developing countries the denominator would include all the labour force (agricultural as well as informal). The relationship between this ratio and wages that largely cover the organized and formal (though not necessarily unionised) sectors is therefore not subject to meaningful expectation. However, this problem does not obtain in relatively developed economies. In the developed economies since non-formal activities are negligible the extent of unionisation does reflect its true spread in the labour market. The result suggests that unionisation, controlled for the growth and globalization variables; in industrial economies has had the tendency of pushing the wage regime down in the two decades. Clearly as far as developing countries are concerned the index has inherent problems. The next variable we introduce instead of the union density variable is an index of freedom of association and collective bargaining FACBW. This is indicator that has been constructed based on a careful and detailed research done at the ILO by Kucera (Kucera, 2003). A high FACBW value means strong rights and a low value suggest weak ones. This variable also has a negative sign with respect to wages in both developed and developing countries. For given RGDP, T and F, it would seem a higher FACBW score also has a

depressing effect on the “wage regime”. This is of course not say about what happens to wages of those workers who enjoy these rights compared to those who do not. What the result suggests is that for given per capita national income and extent of globalization (as reflected in T and F) that – stronger collective bargaining rights for the part of the workforce that enjoys these rights, whatever it may do specifically for wages of those workers, can have a depressing impact on the wages of all workers taken together. This finding seems to be valid in both the developing and the developed economies. In developing economies the logic of this result could suggest greater bargaining rights in parts of the organized economy may lead to depression in the overall wage regime because it may constitute investment disincentives. It is a result that needs to be probed further precisely because it seems counter intuitive both in terms of alternative empirical tests as well as identifying mechanisms through which it may obtain. The third social conditions variable used is that of Civil Liberties due to Freedom House (FHCL). A higher FHCL index in the developed world means higher wages but this relationship does not seem to be significant in developing countries. The results at a global level show a negative sign. It seems that only in the developed world, i.e. where a certain level of material well-being has already been achieved – do we have the expected positive impact of civil liberties on the wage regime. Composite results of the social variables taken with T, F, and RGDP are presented at the end of Table 1a (Regressions 28, 29 and 30).

Lagging independent variables should capture the causal or sequencing dimension a little better. Lagged results are presented in Table 1b in the same order as the results for Table 1a. We find some important differences compared to the preceding results. The overall effects of lagged T on wages- controlled by lagged RGDP (Regressions 10, 11 and 12) as well as uncontrolled by RGDP (regressions 1, 2 and 3) is positive, which is consistent with the idea of growth as a recovery mechanism suggested earlier. This coefficient is also stronger for developed world, explaining the difference in the extent of recovery between developed and developing countries. The unionisation variable is still negative in developed economies with lagged T, F, and R (Regression 21). FACBW loses its significance for developing countries but is still negative for developed economies (Regressions 23 and 24). By and large the results suggest a lagged improvement in wages with increased T, while the FDI and RGDP effects on wages, negative and positive respectively, are the same. The wage depressing aspects of labour market indicators of Unionisation and FACBW used as controls are not accentuated for developing economies in the lagged models, except for the civil liberties indicator FHCL which becomes significantly negative. The point that has to be borne in mind is that these results use all the information available on wages and by virtue of that fact represent an effect on the *overall* wage regime. We should recall that far too often conclusions on the entire wage regime are drawn from an analysis which takes wages to be “represented” by average or sector specific wages (e.g. in parts of manufacturing or traded goods sectors) and links it to extent of economy wide “rights based indices”. As suggested it may well be the case the extent of “rights” for those who enjoy those rights could lead to improvements in their wages but depresses the wages of others. The question of how the incidence of rights in an economy-wide sense affects wages (the wage regime) of all workers is a different one from how the wages of those who have certain rights are affected by virtue of their having those rights.

In general our conclusions on wages and globalization suggest that T and F tend to initially cast a negative effect on wages after which there is recovery. This recovery is stronger in developed economies. When controlled for RGDP we get positive effects for T in developed economies, especially when lagged. The FDI effect on wages controlled for RGDP is not significant for developing countries and in one case is significantly positive. Thus the impact of FDI on the level of wages in general is not that important in developing countries, even though developing countries are increasing their global share of FDI flows. The introduction of selected institutional variables that can possibly influence the labour market, seem to have mixed implications for wage regimes given income levels and the extent of globalization. Greater

unionisation in developed economies seems to be associated with lower economy wide wage levels in the period. Freedom of association and collective bargaining also seem to be “wage regime” depressants, although this is less true for developing countries in the lagged tests. Lastly civil liberties do not seem to have a significant impact on wages especially in developing economies in the shorter run, but when used with lagged RGDP, T and F, greater civil liberties also show a negative sign. It is in industrialized countries that a positive association between civil liberties and wages can be established.

## 5. The effects of trade and FDI flows on wage dispersion

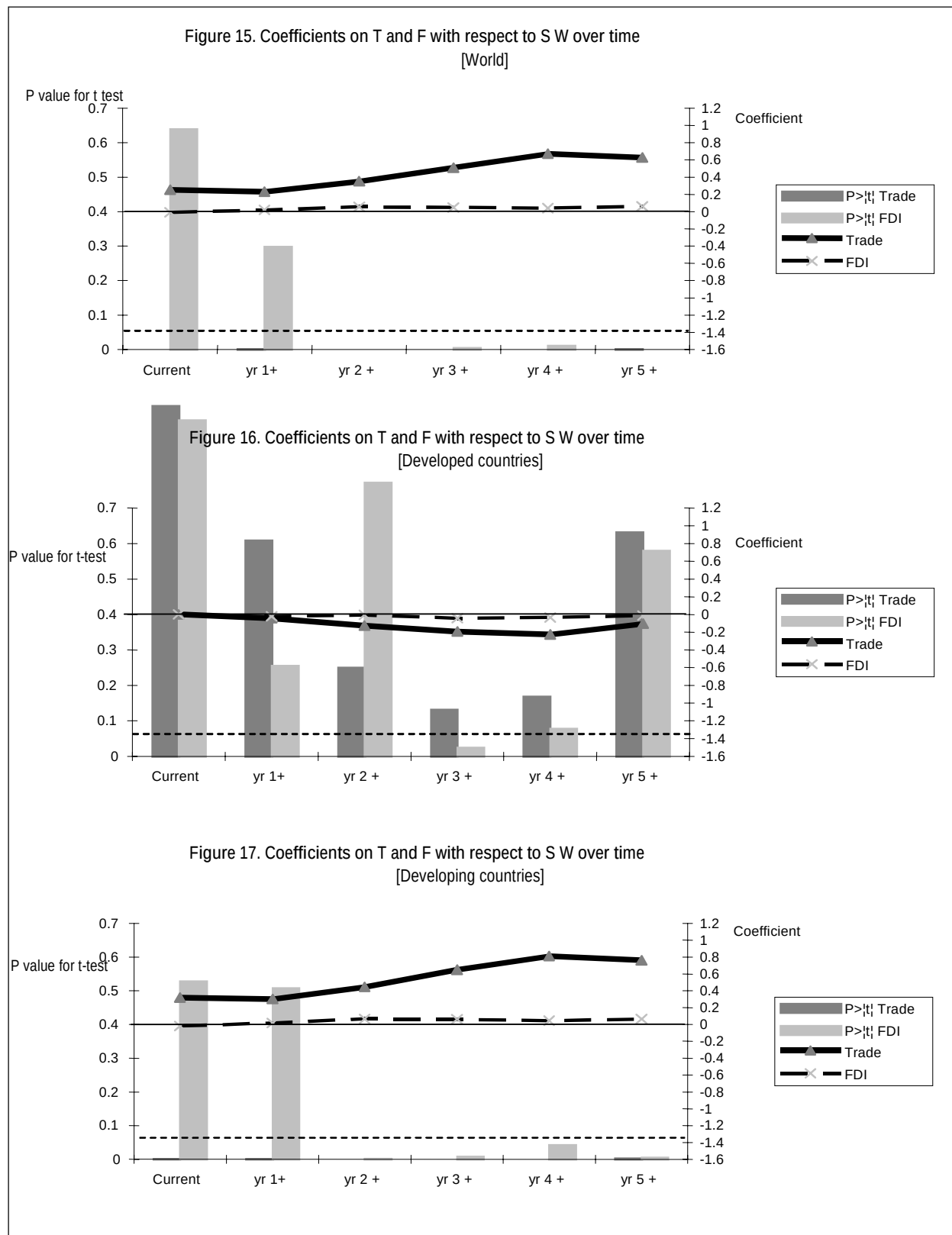
The generalisations from the preceding discussion are the following. First, there is a wage depressing effect of openness on wages everywhere which turns positive over time- especially in developed economies. Secondly FDI is relatively less important than trade is for wages in developing countries; and thirdly, the adverse or non effect of labour market / institutional environment indicators on the wage regime as a whole, which are suggestive of trade-offs existing in the labour market.

The findings on wage levels do not tell us much about the specific types of occupations affected by enhanced openness. For a view on what is happening within this broad pattern, we either need to look at specific traded sectors (which is not in the scope of the present exercise) or examine some measure of the dispersion of wages in relation to T and F. Examining wage dispersion may tell us something about the relative effect of T and F on broad skill types.

In particular if we find that dispersion declines then it would be consistent with the idea that unskilled labour demand increases (a relative decline in wages at the top end). On the other hand if we find that wage dispersion increases then it would be more supportive of the idea that skilled labour demand increases (a relative increase in the wages at the top end). Although these interpretations are in themselves not necessary, neither of these possibilities is inconsistent with the idea of over all wages showing an initial short run decline.

The issue of the demand for the type of labour that takes place as a result trade openness is worth thinking about, since there are some theoretical expectations with regards to it. Increasing demand for “unskilled labour” as a result of openness in developing countries is an expectation based on a benchmark notion of average of skills in developed economies. It is quite possible that labour whose demand increases as a result of increased openness is relatively skilled in the domestic context of the developing country while still less skilled from a developed economy point of view. Such confusions based on contextual mis-specification ought to be avoided. In particular where we find that manufacturing spearheads trade led growth in developing countries; it is likely that it is not unskilled but skilled labour in the domestic economy context that is affected. If this is the case we could expect dispersions in wage rates to increase in relation openness and not decline.

We take the standard deviation of wages and run exactly the same panel regressions with fixed effects with T and F as independent variables progressively lagged. Once again the objective of this dynamic model is not to “explain” the dispersion of wage rates, but rather the focus is on trends captured in the coefficients relating T and F to W over time. The equation set that is estimated is given below.



Note: The left hand y axis shows the significance of the t-test on the coefficient. Shaded bars display the significance (read from the left hand y-axis where the 5 per cent level is marked as a horizontal dashed line) on the T and F coefficients respectively for the current and subsequent years represented by the x-axis. So bars above this dotted line represent the non-significance of the coefficient. The value of the coefficients is represented by the right hand side of the y-axis. Details of each FE regression whose coefficients are plotted are not presented but available upon request from the author. Since we have a large number of observations, these fixed effects control for country and year effects. SW: Standard deviation of Xpppcw

$$SW_0 = C + b_0 T + \wedge b_0 F - (6.1);$$

$$SW_0 = C + b_1 T + \wedge b_1 F - (6.2);$$

$$SW_0 = C + b_2 T + \wedge b_2 F - (6.3);$$

$$SW_0 = C + b_3 T + \wedge b_3 F - (6.4);$$

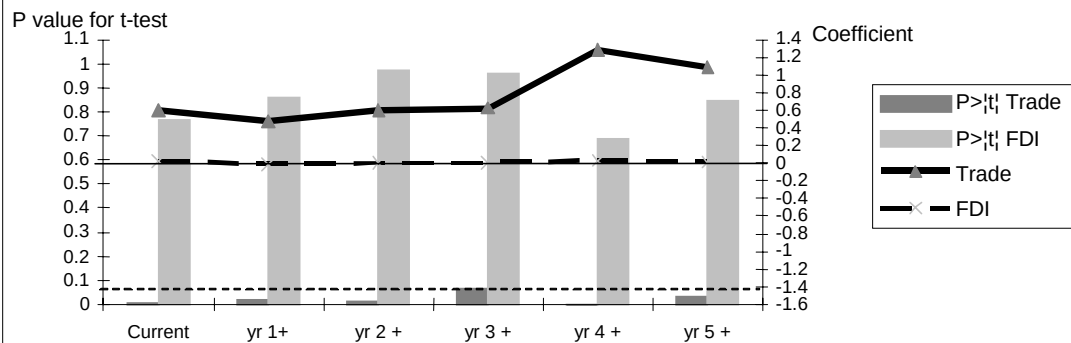
$$SW_0 = C + b_4 T + \wedge b_4 F - (6.5);$$

$$SW_0 = C + b_5 T + \wedge b_5 F - (6.6).$$

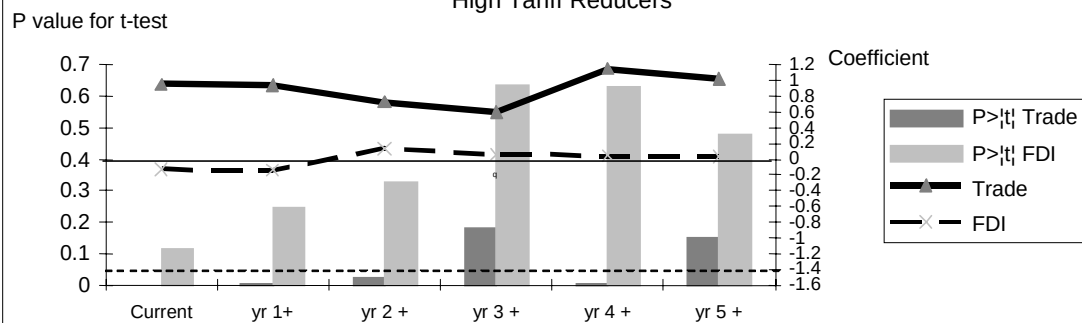
Where SW is the vector of the standard deviation of our *x-transformed* wage rates, C is the constant T is the *x-transformed* trade-GDP ratio and F is the *x-transformed* ratio of FDI-GDP ratio. There is one observation per country and year. Subscripts signify periods, where 0 is the current period and 1 2 3 4 5 are period lags. So, for example, in equation (5.3) :  $SW_0 = C + b_3 T + \wedge b_3 F$ ,  $b_3$  represents the effect on present standard deviation of wages, of T lagged by three years controlling for the similarly lagged F; and  $\wedge b_3$  the effect on present standard deviation of wages, of F also lagged by three years controlling for a similarly lagged T. Diagrams plot coefficients on T and F over the time lags. This allows us to see the effects of T and F on SW in the same year, after one year, after two years and so on until after the fifth year. Our initial comparisons are based on looking at world as well as developing and developed economies separately. Since we are using a dispersion measure we selected only those cases where the observations on occupations were more than 50 per cent in a country and year. This is because dispersion measures tend to get sensitive to a low number of observations. Once again it is important to note what this dispersion measure means. It is a dispersion of wage rates, not a measure of income inequality.

It is quite obvious that at a world level wage dispersion increases with T over time. The same is not true for the coefficients on F. What is interesting is that we do not find this effect of increasing dispersion in developed economies. In fact as can be seen there is no effect here. Thus while there may be signs of increasing wage dispersions in developed economies in the period, these are not directly related to changes in T and F. It is in developing countries that increasing wage rate dispersions can be associated with T (Figure 18) and we find that this may not be inconsistent with the idea that it is relatively skilled labour whose demand increases with increased T and F. When dispersion effects are examined in selected country groups within the developing world for the three special classifications of High Traders, High Tariff Reducers and High Importing Tariff Reducers we find interesting results (Figures 18 to 20). In general FDI effects on wage dispersion are seldom statistically significant, in any group. In other words for country groups that successfully increase trade or those that reduce tariff most, or even the group which is supposed to possibly capture the downside of opening up, FDI does not significantly enhance wage dispersion. The reason for this is actually quite straightforward. The number of jobs and wage rates directly affected by FDI is often not large enough to have general effects on all wage rates in developing countries. Trade increases however do affect wage dispersion. For each of the sub-groups, but especially for High Traders and High Tariff Reducers enhanced trade increases wage dispersion significantly. The reason is probably because the trade affect on wages is more in the relatively skilled occupations in developing world.

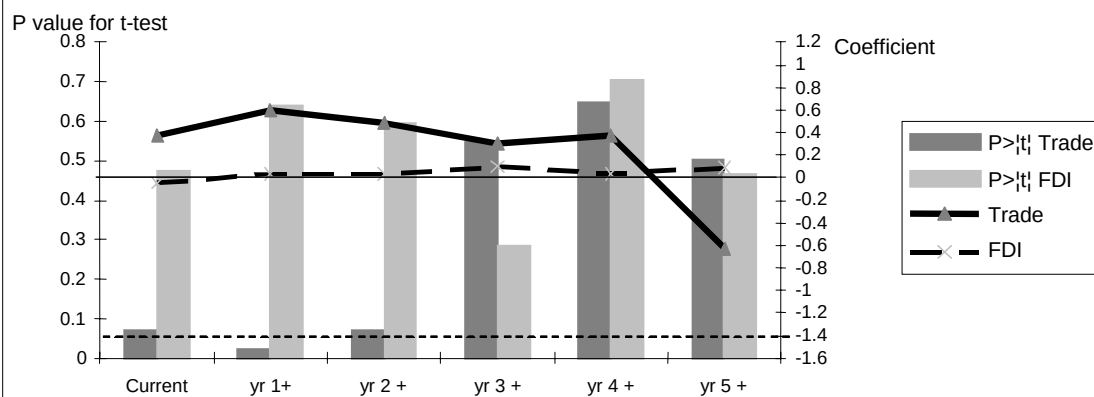
**Figure 18. Coefficients on T and F with respect to SW**  
Developing Countries  
High Traders



**Figure 19. Coefficients on T and F with respect to SW**  
Developing Countries  
High Tariff Reducers



**Figure 20. Coefficients on T and F with respect to SW**  
Developing Countries  
High Importing Tariff Reducers



Note: The left hand y axis shows the significance of the t-test on the coefficient. Shaded bars display the significance (read from the left hand y-axis where the 5 per cent level is marked as a horizontal dashed line) on the T and F coefficients respectively for the current and subsequent years, represented by the x-axis. So bars going above this dotted line represent the non-significance of the coefficient. The value of the coefficients is represented by the right hand side of the y-axis. Details of each FE regression whose coefficients are plotted are not presented but available upon request from the author. Since we have a large number of observations, these fixed effects control for country and year effects.

SW: Standard deviation of  $X$  ppp cw.

**Table II. Summary findings on dispersion of wages**

## All Countries Regression Coefficients on variables explaining dispersion of wages

|        | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade | –             | –    | 5             | 2    | 7                                               | 5/7   | -    |
| Xfdi   | –             | 6    | –             | 1    | 7                                               | -     | -    |
| Xrgdp  | 5             | 3    | –             | –    | 8                                               | -     | 5/8  |

## All Countries Regression Coefficients on lagged variables explaining dispersion of wages

|             | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade(lag) | –             | 2    | 5             | –    | 7                                               | 5/7   | -    |
| Xfdi(lag)   | 2             | 2    | 2             | 3    | 7                                               | 2/7   | 2/7  |
| Xrgdp(lag)  | 8             | –    | –             | –    | 8                                               | -     | 8/8  |

## Developing Countries Regression Coefficients on variables explaining dispersion of wages

|        | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade | –             | –    | 5             | –    | 5                                               | 5/5   | -    |
| Xfdi   | –             | 4    | –             | 1    | 5                                               | -     | -    |
| Xrgdp  | 4             | 2    | –             | –    | 6                                               | -     | 4/6  |

## Developing Countries Regression Coefficients on lagged variables explaining dispersion of wages

|             | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade(lag) | –             | –    | 5             | 3    | 5                                               | 5/5   | -    |
| Xfdi(lag)   | –             | –    | 1             | 4    | 5                                               | 1/5   | -    |
| Xrgdp(lag)  | 2             | 4    | –             | -    | 6                                               | -     | 2/6  |

## Developed Countries Regression Coefficients on variables explaining dispersion of wages

|        | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade | –             | 6    | –             | 1    | 7                                               | -     | -    |
| Xfdi   | –             | 7    | –             | –    | 7                                               | -     | -    |
| Xrgdp  | 1             | 7    | –             | –    | 8                                               | -     | 1/8  |

## Developed Countries Regression Coefficients on lagged variables explaining dispersion of wages

|             | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade(lag) | 7             | -    | –             | 2    | 7                                               | -     | 7/7  |
| Xfdi(lag)   | 7             | -    | –             | –    | 7                                               | -     | 7/7  |
| Xrgdp(lag)  | 1             | 7    | –             | –    | 8                                               | -     | 1/8  |

Source : Tables 2a and 2b in Annex

Just as in the second part of the discussion of wage levels, we now try and look at the results in a more comprehensive and systematic manner by introducing controls. In the preceding discussion on graphs, we simply examined coefficients on T controlling for F; and on F controlling for T over time lags and the national income effect was not separated out. We now look at fixed effects regressions introducing controls for RGDP as well as selected labour market /institutional environment proxies. A summary Table II below presents coefficient signs on the non-institutional indicators (i.e. T, F, and RGDP). The results are interesting. For the developing countries group, we find that both trade and, to a lesser extent and with a lag, FDI have wage dispersion enhancing effects. However the real gdp per capita shows a dispersion reducing negative sign. So at least in the medium run there is openness enhances wage gaps but growth is likely to reduce them. We must bear in mind that we are talking about wage dispersion (which covers a wage regime that excludes large sections of the labour market) and not income inequality thus this does not have a bearing on whether a Kuznets process is at work or not. In contrast what is striking is that in developed economies the effects are likely to come after lags and are dispersion reducing. In other words, indicators of globalization tend to reduce wage dispersion and not increase it in developed economies. Thus if we seek to explain the small changes in wage inequality in developed economies these are to be sought elsewhere. Detailed results are reported in Table 2a in Annex. Introducing institutional variables in contemporaneous regressions show no significant effects in developing countries. Over lags there is significant sign for FACB, which a positive one. The explanation for this is not so obvious but it may be that those who enjoy FACB in developing countries are in not in occupations at the low end of the wage spectrum. Interestingly in developed economies the contemporaneous regressions show a positive significant sign for FACB as well as Union Density, which means that these have some effect in increasing wage dispersion. Civil liberties reduce dispersion in developed economies and with lags only the Civil liberties coefficient is preserved.

The trends in the wage dispersion-openness relationship that we looked at in the graphs based on the dynamic descriptive panel are confirmed to a large extent. Essentially openness does enhance wage inequalities in developing countries, reduces them in developed economies. By and large growth tends to reduce wage wage dispersion, and institutional variable pertaining to the labour market tend to increase it.

In summary, during this period we find that in developing countries openness depresses the wage regime in the short run, though this is subject to some recovery, and it increases wage inequalities. In contrast in developed economies the short run negative effect of openness on wages is truly temporary that leads to a clear recovery and wage enhancement over time, while wage dispersions also seem to be reduced by openness over time. The effects of globalization on wages in the developed world are arguably better in developed countries than they are in the developing world.

## 6. Openness and growth

The second plank of our investigation concerns the relationship between realized openness and economic growth. The importance of asking this question is that the general expectation is likely to be that openness does enhance economic growth<sup>27</sup>. If this is the case then we should expect wages to improve at least after lags, since wages are positively linked to increasing real GDP, which may partly explain recovery. Like in the previous sections on openness and wages we again need to point out at the outset of this section why *liberalisation policy* implications need not be drawn from most of the analysis of openness with respect to growth presented in this section. The proposition that trade enhances growth is a very different one from claiming that trade liberalisation policies enhance growth or trade liberalisation policies enhance trade which in turn enhances growth. While our focus is on the issue of the effects of *realized* T and F ratios, where T is the openness indicator capturing the sum of exports and imports as percentage of GDP, it is worthwhile explicitly distinguishing this realized openness from the liberalisation policy which is “intended” or supposed to enhance trade (and attract FDI). The basis of conflation between policy and outcome has been commented upon in the literature and obtains when an unjustified policy innuendo is made in analysis involving variables that properly measure outcomes only. The point has also been made that developing countries that have done best on enhancing trade (and attracting FDI) have not necessarily been the strongest or fastest liberalisers and in fact have been very selective and targeted in designing and implementing their liberalisation policy frameworks. India and China are major examples that together constitute a major part of the developing world population.<sup>28</sup> There are other examples too.

We had also suggested in the earlier discussion that it is important to recognise that the effect of opening up on wages can be a direct one which is driven by changes in demand for employment in *directly* trade affected sectors, or it can obtain via growth. It would seem plausible to argue that while both mechanisms are likely to operate in developed economies, it is likely that the second round growth mechanisms are dominant in developing countries since direct employment in trade related sectors is unlikely to be sizable relative to the size of the labour force in most developing countries. The latter mediated effect would work by changes in T and F ratios impacting sectoral profitabilities, leading to movements of domestic capital and investment across sectors and growth; and that growth reacting back on the economy as whole, increasing demand and possibly wages over time. We have seen in the previous sections that higher RGDPs unambiguously enhance real wages everywhere.

Strictly speaking, it is problematic to consider foreign trade as an exogenous variable when looking at the growth of national income. Like national income and its distribution, many economic variables are determined by economic structure and technological possibilities,<sup>29</sup> however in looking at empirical relationships at this level we need to abstract to some extent from the complexity of determinations. While it is generally difficult to disentangle direct employment and growth mediated effects of trade, there is some room to explore if there are grounds to expect changes in T to affect real GDP per capita in the same direction. The empirical literature on trade and growth relationships goes in both directions. There is evidence to support

<sup>27</sup> Supportive results can also be found in Dollar (1992); Harrison (1994); Sachs and Warner (1995, Edwards (1998), Frankel and Roemer (1999), Ales and Glaeser (1999); Ben-David Nordstrom and Winters (2000). Ghose (2001) also has similar findings on the basis of trade-GDP ratios for the manufacturing sector only.

<sup>28</sup> Rodrik (2000).

<sup>29</sup> By structure we mean economic and social institutional arrangements, technological possibilities, factor endowments and private (household) and public preferences.

the linkage as well as to be suspicious of it. Our view is that a judgement is needed on the different results taken together. Since we will go on to present our own results on the issue a brief outline of existing issues and empirical work is in order.

Estimates based on cross sectional analysis can be subject to specification errors, biased estimation and simultaneity problems. Pooling data when estimates are not comparable, problems of omitted variables are problems discussed in the technical literature.<sup>30</sup> Cross sectional analysis always falls well short of many of these ideal preconditions. Our attempt in this section is to try and examine the relationship between trade openness and growth by conducting three types of analysis on data that is based on 5 year averages and decadal averages respectively. The use of 5-years and decadal data is to attempt to capture to short run effects, the use of decadal data to capture medium run ones. We use T and F as representing the trade regime, although the focus is on T. The well known capture limitations on these indicators are recognized. We have been unable to use fixed effects regression because of data limitations, therefore robust level OLS and change OLS regressions are used. The first set of results in Table 3a and 3b (in Annex) are based on simple growth regressions on level data.<sup>31</sup> Table 3a uses five-year averages and Table 3b uses decadal averages. This basic equation is of the following form.

$$G_{cp} = \beta_0 + \beta_1 \cdot G_{c,p-n} + \beta_2 \cdot X_{cp} + \epsilon + \gamma \quad (6.1)$$

Where  $G_{cp}$  is the dependent variable representing GDP per capita in a given period,  $G_{c,p-n}$  is GDP per capita lagged by a selected period and  $X$  is a vector of independent variables for the same period as the dependent variable;  $c$  is a country subscript,  $p$  is the period,  $n$  is the number of years of the lag, which in our case is 5 or 10,  $t$  is the period of the data, this simply means that the regressions are controlled for the time period in the panel,<sup>32</sup> and  $\gamma$  is the error term. The use of the lagged dependent variable as an independent variable is seen as a control on the dependent variable for estimation. Change regressions in a cross section are more pointed in what they capture. Recent research by Dollar and Kraay<sup>33</sup> suggests a possible method to deal with some problems that typical growth econometrics is known to face in the literature. They argue that running “growth on growth” regressions, as above, have important desirable features. First, change data are not subject to influence by geographical characteristics as level analysis. Second, at least some stable omitted variables that are correlates of trade but change little over time may influence level analysis but would not affect change analysis. It can also be argued that change variables capture change within a country and this in a sense endogenises structural and institutional conditions obtaining within each country in a cross section. Once these conditions are internalised, it is intuitively more obvious to explain recent growth with respect to past growth and other change variables as a functions of changing national products, across the cross

<sup>30</sup> See Atkinson and Brandolini (2001) on data pooling and Rodriguez and Rodrik (2003) on model specifications. In fact there are too many informational requirements for conducting an ideal analysis which ultimately requires not only data from the same universe for which institutional conditions are continuous but also a perfect set of indicators, a general equilibrium framework which simultaneously determines economic variables, and which has the possibility of endogenising at least some if not all policy variables as well.

<sup>31</sup> Typically, in a growth regression, what is done is that  $G_{cp}$  and  $G_{c,p-n}$  are taken as *point estimates* so for example  $G_{cp}$  could be a value for 1990 and  $G_{c,p-n}$  a value for 1980. The values in the variables in  $X_{cp}$ , on the other hand are the average values of the concerned independent variable in the vector, over *the period*  $p$  and  $p-n$ . In relation to the end date point value of dependent variable the  $X$  averages constitutes lags. We do not use point estimates in our tests at all. Since there are considerable fluctuations in point values and we smooth the value as 5 year or decadal averages.

<sup>32</sup> Since we wanted to split the sample by developed and developing country we checked for time periods. It did not yield any significant coefficients.

<sup>33</sup> Dollar and Kraay (2001) discuss this in detail. Their method is based on Caselli, Esquivel and Lefort (1996) cited in the paper.

section. Change regressions also allow for easier instrumentation<sup>34</sup> to control for reverse causality from growth to trade. In a typical two staged least squares regression recursivity problems are supposedly addressed since in instrumenting one variable by its initial level we take the other independent variable as an instrument as well.<sup>35</sup>

More formally in equation (6.2)  $\partial$  symbolizes change. The term  $\mathbf{p-n} \rightarrow \mathbf{p}$  is the period of change from  $\mathbf{p-n}$  to  $\mathbf{p}$ , and  $\mathbf{p-n} \rightarrow \mathbf{p-n-5}$  is the period of change from  $\mathbf{p-n}$  to  $\mathbf{p-n-5}$ . So if  $\mathbf{p}$  is 1990 and  $\mathbf{n}$  is 5 then  $\mathbf{p-n} \rightarrow \mathbf{p}$  the change from 1985 to 1990. We can just replace 5 by 10 for decadal equations.

$$\partial G_{c, \mathbf{p-n} \rightarrow \mathbf{p}} = \beta_1' \partial G_{c, \mathbf{p-n} \rightarrow \mathbf{p-n-5}} + \beta_3' \partial T_{c, \mathbf{p-n} \rightarrow \mathbf{p}} + t + \gamma' \quad (6.2)$$

What equation 6.2 does is to estimate change in the dependent variable as a function of the change value of the dependent variable in the previous period and the change values of the independent variables for the same period as the dependent variable.

In Table III below we give a summary of basic results that are discussed in more detail later. The overview of our results suggests positive effects of  $T$  and  $F$  on growth. Importantly the change regressions in developing countries give support to positive trade and growth relationship. It is helpful to look at detailed results of these regressions in a certain sequence. In Tables 3a and 3b (in Annex), regressions 1, 2 and 3 are very similar. For past per capita income, as expected, we find a positive relation with present period GDP per capita. We also find with respect to other two independent variables, that whenever there is a significant coefficient, *it is positive*. So freer realised trade regimes (measured by  $T$  and  $F$ ) can be associated with higher per capita income. The positive trade openness and income effects are likely to be driven more by developed economies in the level analysis although the coefficient is still positive in developing countries, while the positive independent effect of  $F$  in a similar sense is likely to be driven more by developing countries. Medium or longer run effects expressed as significant coefficients (in Table 3b) are always stronger than short run effects (Table 3a). When the regressions are run with all independent variables for the previous period (in regressions 4, 5, 6 in both tables), we find that the lagged  $T$  loses its significance, and only lagged  $F$  remains positive and is significant for developing countries. This is because  $T$  and  $F$  lagged are likely to be more related to the control variable  $G$  lagged, than they are to it when they are for the same period as the dependent variable. We then look at  $T$  and  $F$  separately still keeping the control of previous period income per capita. This indicates if there is an independent association of  $T$  or  $F$  with  $G$ , abstracting from the issue of their inter-relationship. Clearly if we expect that  $T$  and  $F$  are themselves related as we do, then the results on the separate  $T$  or  $F$  regressions could be stronger. We find both  $T$  and  $F$  to be positive and significant in the medium run decadal regressions (regressions 7 to 18) for the model where only past GDP per capita is lagged as well as the regressions where both independent variables are lagged. In the short run 5-year average regressions all coefficients on  $F$  are significant and positive, while those for  $T$  are only significant and positive for developed economies. The general story emerging from level analysis is the following.  $T$  and  $F$  are likely to enhance  $G$  or are, at least, not detrimental for  $G$ . The results are likely to be stronger for developed economies in the shorter run and for both developed and developing economies in the

<sup>34</sup> Good instruments, it is well known, are hard to come by, even though if we do come by them endogeneity problems can be dealt with better. Researchers (e.g. Frankel and Roemer (1999)) who use geographic variables to instrument for trade, do not quite succeed since the distance variables themselves affect levels of national income. Details of instrumentation are given in a footnote below.

<sup>35</sup> Dollar and Kraay's (2001) analysis is based on more sophisticated econometrics in which they instrument variables with GMM estimation methods. However their use of decadal averages requires the use of 1970s, which is probably problematic as it is arguably prior to shift in opening economies up in developing countries.

**Table III. Summary findings on openness and growth**

All countries OLS regression coefficients on variables explaining RGDP

|       | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| trade | -             | 2    | 4             | 2    | 8                                         | 4/8   | -    |
| fdi   | -             | -    | 8             | -    | 8                                         | 8/8   | -    |

All countries OLS regression coefficients on variables explaining change in RGDP

|               | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|---------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| trade(change) | -             | -    | 7             | 1    | 8                                         | 7/8   | -    |
| fdi (change)  | 1             | 3    | -             | 4    | 8                                         | -     | 1/7  |

Developing countries OLS regression coefficients on variables explaining RGDP

|       | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| trade | -             | 4    | 2             | 2    | 8                                         | 2/8   | -    |
| fdi   | -             | -    | 8             | -    | 8                                         | 8/8   | -    |

Developing countries OLS regression coefficients on variables explaining change in RGDP

|               | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|---------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| trade(change) | -             | -    | 6             | 2    | 8                                         | 6/8   | -    |
| xfdi(change)  | 1             | 3    | -             | 4    | 8                                         | -     | 1/8  |

Developed countries OLS regression coefficients on variables explaining RGDP

|       | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| trade | -             | -    | 6             | 2    | 8                                         | 6/8   | -    |
| fdi   | -             | 3    | 4             | 1    | 8                                         | 4/8   | -    |

Developed countries OLS regression coefficients on variables explaining Change in RGDP

|               | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|---------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| trade(change) | -             | -    | -             | 8    | 8                                         | -     | -    |
| fdi(change)   | -             | 3    | -             | 5    | 8                                         | -     | -    |

Source : Tables 3 (a) to 3 (d) in Annex.

medium run. However, it goes without saying that the relationships may not be causal and could obtain because of the variation across the cross section. In other words, regardless of how much we try to isolate the dynamic features of a relationship by lagging independent variables, cross section analysis in its level form may not be able to properly separate the space and time aspects of relationships. The issue is important to note, because very often higher indices of social and institutional development are themselves related to income per capita.<sup>36</sup>

<sup>36</sup> To interpret level cross sectional relationships dynamically, without this qualification is tantamount to assuming that structural and institutional conditions un-captured by the independent variables in the regressions are similar or common across the cross section of countries in the regression. Thus it was useful though still far from perfect, to not only to lag the dependent variables in the level cross section but also separate country groups. This is what we have done.

To come closer to a causal interpretation we need to additionally do change regressions. We test for “change on change” in Tables 3c and 3d for the short and medium run respectively. The first thing to note in the change regressions is that the standard growth regression is similar for the short run (Table 3c) and the longer or medium run (Table 3d). The effect of changes in T, enhance growth even when the effect of past growth on present growth is taken in to account (Regressions 1 to 6). This is true especially in developing countries where the coefficient is positive and significant. Changes in F are significant in no instance. What is however worth noting is that results are generally stronger for the longer run decadal regressions. Thus it can be claimed more confidently that growth in T enhances growth in G and that this result generally obtains for developing countries and is probably stronger in the medium run. In conjunction with level results of Table 3a and 3b, that showed non-significant signs on T, the significant sign on change in T, suggests that there is some basis to expect a positive relationship. Similar results come through in the short as well as the medium run for growth in T and F taken separately, thus indicating those changes in T do impact growth in developing countries, and changes in F on the other hand do not have significant effects. In fact, F in one case where it is significant for the decadal data when lagged for the period on the dependent variable (Table 3d regression 18) has a negative sign. Finally, instrumenting the independent variables in two- stage least squares regressions with 5 year average data (Table 3e) or decadal data (Table 3f) does not yield any good results.<sup>37</sup> When both independent variables are instrumented (Table 3e and 3f regressions 1, 2, 3), neither past growth nor change in trade in the same period have significant coefficients. In an alternative specification (regressions 4, 5, 6) past growth un-instrumented does appear to be significant and has a positive sign in developing countries and the all country regressions. Table 3e and 3f constitute weak results.

If we look at the all the results of Table 3a to 3f together, it can be suggested that positive effects of both T and F indicators on growth are likely to obtain, and whenever these coefficients are significant they are also positive. In particular when we look at change regressions for developing countries these show a positive coefficient for T. However when the change equations are instrumented, the coefficients lose significance. The basic judgement one needs to make is about how much weight we put on instrumented variable analysis. In our view while a significant positive relationship in instrumented regressions would make the analysis more robust but its lack just means that the openness-growth relationship exists, though it is a mediated relationship that needs many other conditions to obtain in order to be realized.<sup>38</sup> We conclude that the existence of an openness-growth relationship cannot be denied especially for developing countries, but it requires other favourable conditions and a medium to longer run

<sup>37</sup> Referring to equation (6.2) above if the chosen instrument for  $\partial T$  is level T lagged, and for  $\partial G$  is level G lagged then our estimates in the first stage of the least squares regression take both instruments in to account for each independent variable. This is basically qualifying equation 6.2 as :  $\partial G_{c, p-n^* p} = \beta_1' \partial \underline{G_{c, p-n^* p-n-5}} + \beta_3' \partial \underline{T_{c, p-n^* p-n-5}} + t + \gamma'$  by the chosen instruments for the independent variables ( underlined above) where and k and z are the lags chosen and  $\partial G_{c, p-n^* p-n-5}$  is considered a function of  $[(G_{p-n-5-k}, T_{c, p-n-z})]$  and  $\partial T_{c, p-n^* p-n-5}$  is considered a function of  $[(T_{c, p-n-z}, G_{p-n-5-k})]$ . [ ] brackets show where the instrumentation is done. So we get:

$$\partial G_{c, p-n^* p} = \beta_1' \partial G_{c, p-n^* p-n-5} [(G_{p-n-5-k}, T_{c, p-n-z})] + \beta_3' \partial T_{c, p-n^* p-n-5} [(T_{c, p-n-z}, G_{p-n-5-k})] + t + \gamma' - (6.3).$$

The results are in regressions 1 to 3. In an alternative instrumentation we do not instrument  $\partial G_{c, p-n^* p-n-5}$  but just instrument  $\partial T_{c, p-n^* p-n-5}$  and use the initial level of GDP per capita as a control, as expressed in equation 6.4 below, where [ ] brackets show where the instrumentation is done.

$$\partial G_{c, p-n^* p} = \beta_1' \partial G_{c, p-n^* p-n-5} + \beta_2' G_{c, p-n-5, p-n-10} + \beta_3' \partial T_{c, p-n^* p-n-5} [f(T_{c, p-n-5, p-n-10})] + t + \gamma' - (6.4).$$

The results are in regressions 4, 5 and 6. Regressions 7, 8 and 9 do not use the initial per capita income as a control .

<sup>38</sup> These conditions may not just be the “institutional” conditions but could well be historically contingent ones. For example they may be production specific. It may be that in the period we are examining it is not total trade but trade in manufactures which has the relationship to growth.

time frame to be revealed best. This does bring us back to the question of the initial short run real wage damage that we observed accompanying trade openness and FDI flows (to a lesser extent) in the earlier sections.

## 7. The short run damage on the wage regime

We have shown that the positive impact of openness on wages (post-adjustment) can be found in a pronounced way in the developed world and not in the developing world. We have found that wage dispersion increases as a result of openness in developing world and not in the developed world. We have also shown that there is some case to be made for openness to be associated with growth over time. One important finding from our previous results, however, is that there is an unambiguous initial negative impact of openness on wages and that this is a common feature in both the developed and developing world. This finding need to be probed a little further and this is attempted in the present section.

For developed economies, we have found that while there was an initial negative effect of T and F on real wages in industrialised nations, this was not only offset over time but moved in a positive zone unambiguously later; and in our more causally suggestive regressions we confirmed that the fixed-effects of changes in real national income per capita on wages in developed economies were generally positive. Since we established that there is some case that can also be made for openness and growth we need to ask the question: if openness leads to growth and growth increases real wages then what is it that explains the initial downward adjustment of real wages to openness? The answers to this may lie partly in trends of shifting demand from less to higher skilled activities in developed economies and its consequent labour market adjustments that may have the temporary effect of reducing wage rates; they may also lie in the movement of prices if it can be shown that prices systematically move such that real wages decline. Examining the general effects of T and F on prices will therefore add insight to the observed initial negative effect on wages. If we find that price effects are not so important here, than the reasons invoking sectoral employment shifts to explain short run wage adjustments would make more sense.

When we look at developing countries, it is worth recalling that the descriptive model showed an initial wage depressing effect of T and F after which there was some indication of off-setting and some recovery by the third year but the recovery here was not like in the developed world. While the positive dynamic wage impact of openness in later years is not so visible in developing countries, the initial negative effect of the initial period is clear enough. We also found in more causally suggestive regressions that the fixed effects of changes in real national income per capita on wages are generally positive, but despite this, the effects of T on wages are at least in immediate periods negative. Since there is a case that can be made for openness and growth to be positively related in the developing world as well, we are in the following situation. Openness leads to growth possibly over some time and growth increases wages, thus the question once again is what is it that explains the initial downward adjustment of real wages to openness? One possible answer is – as suggested above for the developed economies – namely that of shifting jobs across sectors as result of opening up which creates this temporary depression in the wage regime. Import competition could be one mechanism that drives some previously protected industries out of the market, and this change may in turn enforce a greater flexibility in the labour market driving wage levels down. Another source of this depression could indeed be the loss of jobs due to other (liberalisation-)accompanying policies included in the economic reforms like privatisation that have been in evidence in many developing countries.

Our view on this sort of explanation is that unlike the developed economies where the labour markets are tighter; wages and demand are more conventionally related and adjustments may be faster, in developing economies while these factors cannot be ignored, the magnitude of changes in organized employment is unlikely to be large enough to show up as depressing effects of openness on wages. Thus in developing countries the process of employment based sectoral shifts is unlikely to explain the short run fall in real wage rates that we witness systematically with respect to T. The explanation that we explore below could be that opening up the economy may in the short run subject it to inflationary pressures. Thus prices could initially increase with opening up, which means that before the effect of openness on growth comes on, we would witness a fall in real wages.

In order to explore the inflationary explanation we conduct a similar exercise that we initially conducted on levels of wages and wage dispersions respectively. The model looks at the inflation effects of trade openness controlling for foreign direct investment and vice versa. The aim of the model is to capture the statistical significance of coefficients on T and F as opposed to developing an explanation of what determines inflation as such. The first set of relationships examined is between the price level P, T and F. The set of six equations for the estimation are the following:

$$P_0 = C + b_0 T + \wedge b_0 F - (8.1) ;$$

$$P_0 = C + b_1 T + \wedge b_1 F - (8.2) ;$$

$$P_0 = C + b_2 T + \wedge b_2 F - (8.3) ;$$

$$P_0 = C + b_3 T + \wedge b_3 F - (8.4) ;$$

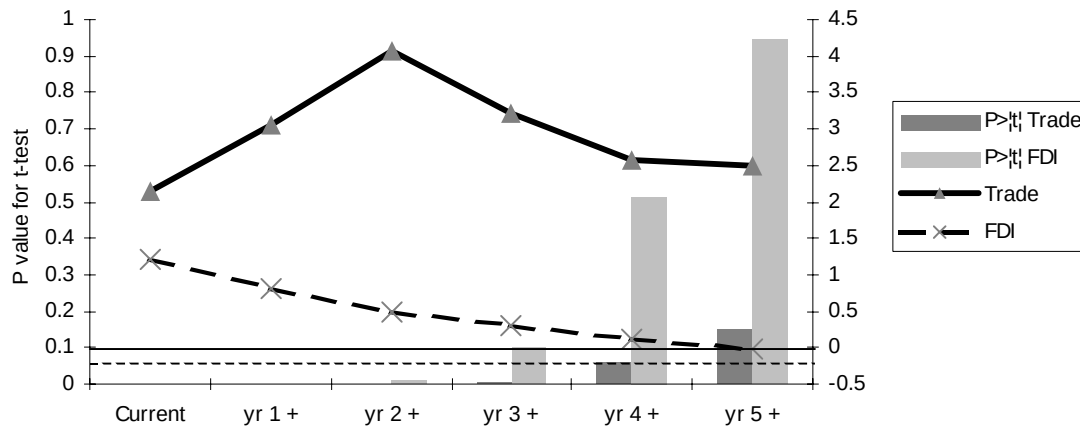
$$P_0 = C + b_4 T + \wedge b_4 F - (8.5) ;$$

$$P_0 = C + b_5 T + \wedge b_5 F - (8.6).$$

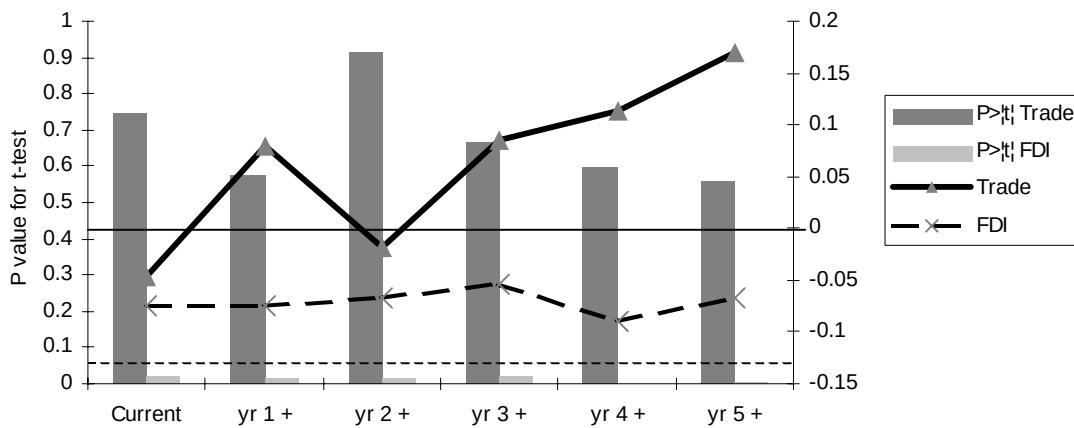
Where P is the log of the Consumer Price Index, C is the constant T is the *x-transformed* trade-GDP ratio and F is the *x-transformed* ratio of FDI –GDP ratio. There is one observation per country and year. Subscripts signify periods, where  $_0$  is the current period and  $_1$   $_2$   $_3$   $_4$   $_5$  are period lags. So, for example, in equation (8.4) :  $P_0 = C + b_3 T + \wedge b_3 F$ ,  $b_3$  represents the effect on present prices, of T lagged by three years controlling for the similarly lagged F; and  $\wedge b_3$  the effect on present prices of F also lagged by three years controlling for a similarly lagged T. Diagrams plot coefficients on T and F over the time lags. This allows us to plot the effects of T and F on P in the same year, after one year, after two years and so on until after the fifth year. As in the earlier exercises this sort of model is descriptive in the sense that it only indicates, though comprehensively, the association in the data set of changes in T and F and prices over space and time. It says little about the mechanisms through which changes in T and F bring about changes in the price regime.

The graphs are plotted in Figures 21 to 23. The global (all countries) pattern in Figure 21 suggests that the T to a larger extent and F to lesser extent both have inflationary effects in the initial period. Interestingly in developed economies in Figure 22 there are no inflationary effects

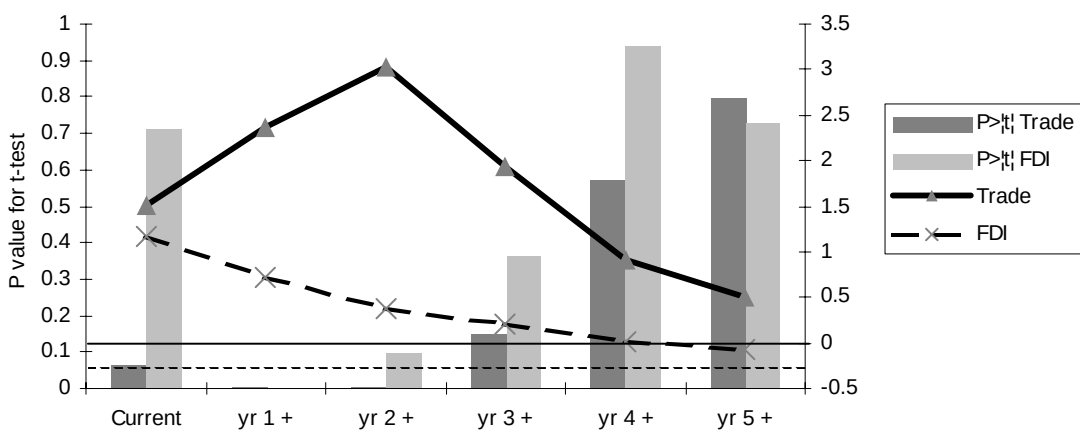
**Figure 21. Coefficients on T and F with respect to log CPI over time**  
[World]



**Figure 22. Coefficients on T and F with respect to log CPI over time**  
[Developed countries]

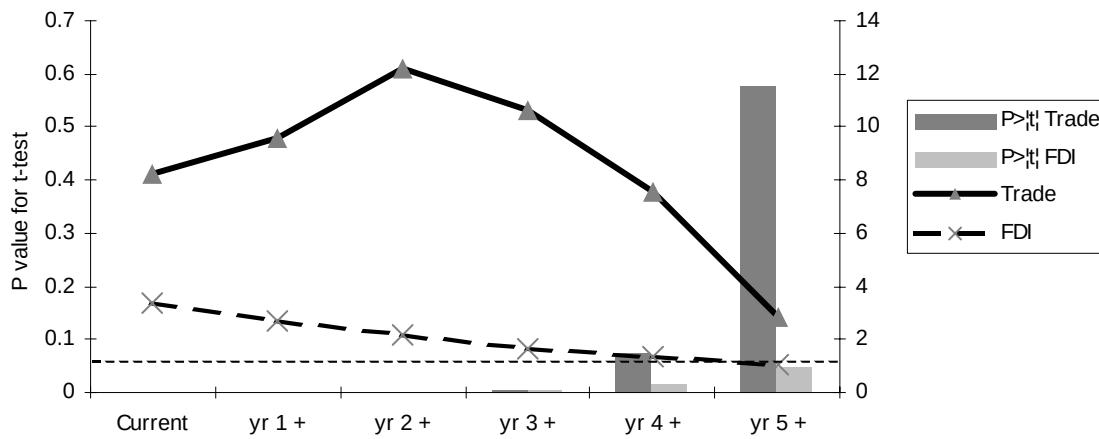


**Figure 23. Coefficients on T and F with respect to log CPI over time**  
[Developing countries]

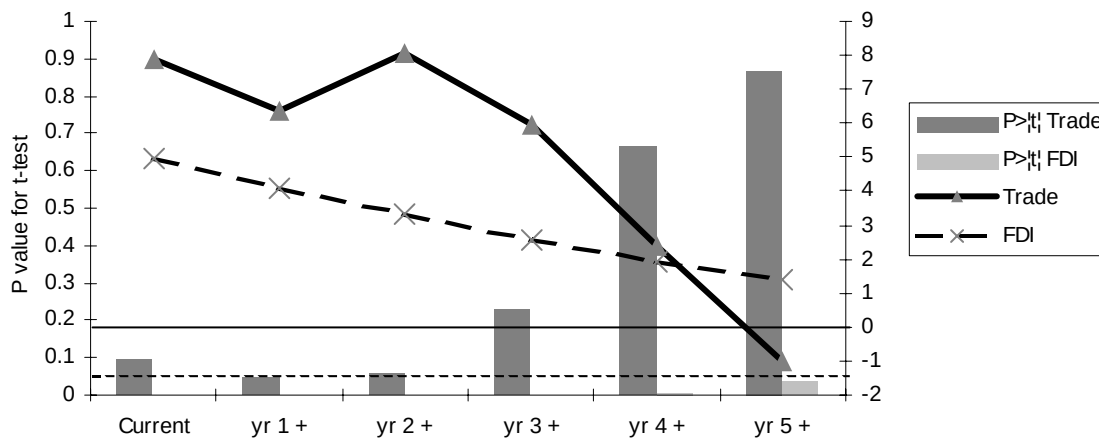


Note: The left hand y axis shows the significance of the t-test on the coefficient. Shaded bars display the significance (read from the left hand y-axis where the 5 per cent level is marked as a horizontal dashed line) on the T and F coefficients respectively for the current and subsequent years represented by the x-axis. So bars above this dotted line represent the non-significance of the coefficient. The value of the coefficients is represented by the right hand side of the y-axis. Details of each FE regression whose coefficients are plotted are not presented but available upon request from the author. Since we have a large number of observations, these fixed effects control for country and year effects. CPI: Consumer Price Index.

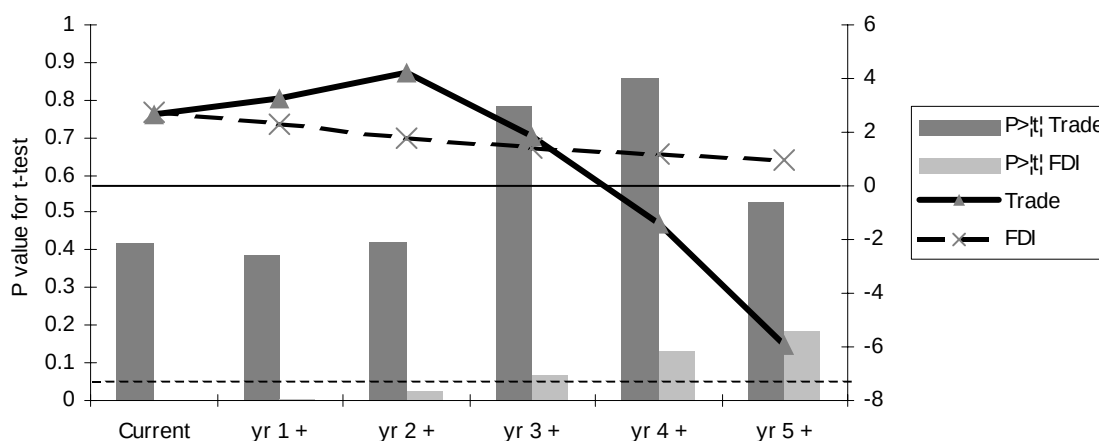
**Figure 24. Coefficients on T and F with respect to log CPI over time**  
[High Traders]



**Figure 25. Coefficients on T and F with respect to log CPI over time**  
[High Tariff Reducers]



**Figure 26. Coefficients on T and F with respect to log CPI over time**  
[High Importing Tariff Reducers]



Note: The left hand y axis shows the significance of the t-test on the coefficient. Shaded bars display the significance (read from the left hand y-axis where the 5 per cent level is marked as a horizontal dashed line) on the T and F coefficients respectively for the current and subsequent years represented by the x-axis. So bars above this dotted line represent the non-significance of the coefficient. The value of the coefficients is represented by the right hand side of the y-axis. Details of each FE regression whose coefficients are plotted are not presented but available upon request from the author. Since we have a large number of observations, these fixed effects control for country and year effects.

of increased T and F, if anything F dampens price levels, thereby enhancing real wages and this effect remains consistent over time. Thus in developed countries it can be suggested that the dominant explanation of negative initial adjustment of wages ought to be based on arguments invoking sectoral demand shifts, while some credit may even be given to lower inflation due to FDI in later periods when we know real wage increases kick in.

When we look at developing countries in Figure 23 we find an inflationary effect of T and F, especially during the first three periods, resembling the global picture. This is consistent with the openness related decline in real wages that we have found in our earlier analysis for developing countries. We can provisionally suggest that while the explanation invoking a sectoral shift of jobs may be a more valid one for explaining the initial decline in real wages in developed economies (since the price effects show otherwise), it is more plausible to argue that the initial negative wage effect of opening up in the developing world is through inflation which reduces real wages in initial periods. Figure 24 to 26 show the coefficient trends for our special groups of developing countries. For both High Traders and High Tariff Reducers we have positive and progressively declining trends for the coefficients on both T and F. The group of High Importing Tariff Reducers show a positive coefficient for F only. Thus there is a temporary inflationary effect of opening up in the developing world which seems to be plausible, with respect to both trade and FDI flows in developing countries as a whole as well as for the purposively selected sub-groups from it. This effect systematically diminishes over time.

By and large we find that the explanation for the openness driven initial downward adjustments in real wages in developing countries is likely to be in good measure a consequence of the effect of opening up on prices. This explanation cannot be put forward for the developed world where, if anything increased FDI seems to have a price dampening effect. Here the explanation is likely to be more related to changes in demand against relatively less skilled occupations. Like in the previous sections, we note that these coefficients are part of a regression model that does not control for national income. Fixed effects regressions are reported in Table 4a to 4f in the Annex. These regressions introduce independent variables systematically with lags. Essentially the results confirm what we find in the graphics based on the preceding descriptive model.

We note that the all country results are driven by the developing countries, and the main findings lie in the comparison between developing and developed countries summarised in Tables IV b and IVc below. The general effect of higher national incomes is one of a lower index of prices, whether we look at the whole world or developing and developed countries separately and whether we look at the same period or regressions with lags. This suggests that higher income countries are less subject to or can control inflation better<sup>39</sup>. More importantly openness related variables, especially T, generally show a positive relationship with prices in developing countries especially in the first three years after which the relationship disappears. This is the period in which we had earlier found a real wage depressing effect of T and F. So *temporary openness-led inflation* may well be part of an explanation of the *short run wage declines* we found in developing countries. More over in the medium run since openness may lead to growth and growth will not only increase wages but reduce prices as well, the offsetting can be explained better. By contrast we cannot say this in developed economies where the effect of T and F is a negative one on prices, and while this may help explain the move of real wages in the positive zone in later years, it still leaves the explanation of the initial damage to rely more on sectoral shifts and wage regime effects of changes demand.

<sup>39</sup> It should be kept in mind that we are looking at an index of prices that are equalised to a beginning year.

**Table IVa. All Countries: Summary findings on Consumer Price Index**

All Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Current year | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|--------------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade(lag)  | –             | –    | 3             | –    | 3                                               | 3/3   | –    |
| xfdi(lag)    | –             | –    | 3             | –    | 3                                               | 3/3   | –    |
| Xrgdp(lag)   | 4             | –    | –             | –    | 4                                               | –     | 4/4  |

All Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 1      | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade(lag) | –             | –    | 3             | –    | 3                                               | 3/3   | –    |
| xfdi(lag)   | –             | –    | 3             | –    | 3                                               | 3/3   | –    |
| Xrgdp(lag)  | 4             | –    | –             | –    | 4                                               | –     | 4/4  |

All Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 2 | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade | –             | –    | 3             | –    | 3                                               | 3/3   | –    |
| Xfdi   | –             | –    | 2             | 1    | 3                                               | 2/3   | –    |
| Xrgdp  | 4             | –    | –             | –    | 4                                               | –     | 4/4  |

All Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 3      | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade(lag) | –             | –    | 3             | –    | 3                                               | –     | –    |
| xfdi(lag)   | –             | –    | 2             | 1    | 3                                               | –     | –    |
| Xrgdp(lag)  | 4             | –    | –             | –    | 4                                               | –     | 4/4  |

All Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 4 | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade | –             | –    | –             | 3    | 3                                               | –     | –    |
| Xfdi   | –             | –    | –             | 3    | 3                                               | –     | –    |
| Xrgdp  | 4             | –    | –             | –    | 4                                               | –     | 4/4  |

All Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 5      | - significant | - ns | + significant | + ns | No of equations<br>in which variable<br>is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------------|-------|------|
| Xtrade(lag) | 1             | –    | –             | 2    | 3                                               | –     | 1/3  |
| xfdi(lag)   | –             | 2    | 1             | –    | 3                                               | 1/3   | –    |
| Xrgdp(lag)  | –             | –    | –             | –    | 4                                               | –     | 4/4  |

Source : Tables 4a to 4f in Annex

**Table IVb. Developing Countries: Summary findings on Consumer Price Index**

Developing Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Current year | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|--------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade(lag)  | –             | –    | 3             | –    | 3                                         | 3/3   | –    |
| xfdi(lag)    | –             | –    | 3             | –    | 3                                         | 3/3   | –    |
| Xrgdp(lag)   | 4             | –    | –             | –    | 4                                         | –     | 4/4  |

Developing Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 1      | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade(lag) | –             | –    | 3             | –    | 3                                         | 3/3   | –    |
| xfdi(lag)   | –             | –    | 3             | –    | 3                                         | 3/3   | –    |
| Xrgdp(lag)  | 4             | –    | –             | –    | 4                                         | –     | 4/4  |

Developing Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 2 | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade | –             | –    | 3             | –    | 3                                         | 3/3   | –    |
| Xfdi   | –             | –    | 1             | 2    | 3                                         | 1/3   | –    |
| Xrgdp  | 4             | –    | –             | –    | 4                                         | –     | 4/4  |

Developing Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 3      | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade(lag) | –             | –    | –             | 3    | 3                                         | –     | –    |
| xfdi(lag)   | –             | –    | –             | 3    | 3                                         | –     | –    |
| Xrgdp(lag)  | 4             | –    | –             | –    | 4                                         | –     | 4/4  |

Developing Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 4 | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade | –             | –    | –             | 3    | 3                                         | –     | –    |
| Xfdi   | –             | –    | –             | 1    | 3                                         | –     | –    |
| Xrgdp  | 4             | –    | –             | –    | 4                                         | –     | 4/4  |

Developing Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 5      | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade(lag) | 1             |      |               | 2    | 3                                         |       | 1/5  |
| xfdi(lag)   |               |      |               | 3    | 3                                         |       |      |
| Xrgdp(lag)  | 4             |      |               |      | 4                                         |       | 4/4  |

Source : Tables 4a to 4f in Annex

**Table IVc. Developed Countries. Summary findings on Consumer Price Index**

Developed Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Current year | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|--------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade(lag)  | 2             | –    | –             | –    | 3                                         | -     | 2/3  |
| xfdi(lag)    | 3             | –    | –             | –    | 3                                         | -     | 3/3  |
| Xrgdp(lag)   | 4             | –    | –             | –    | 4                                         | -     | 4/4  |

Developed Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 1      | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade(lag) | 1             | 2    | –             | –    | 3                                         | –     | 1/3  |
| xfdi(lag)   | 3             | –    | –             | –    | 3                                         | –     | 3/3  |
| Xrgdp(lag)  | 4             | –    | –             | –    | 4                                         | –     | 4/4  |

Developed Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 2 | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade | –             | 3    | –             | –    | 3                                         | –     | –    |
| Xfdi   | 3             | –    | –             | –    | 3                                         | –     | 3/3  |
| Xrgdp  | 4             | –    | –             | –    | 4                                         | –     | 4/4  |

Developed Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 3      | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade(lag) | –             | –    | 3             | –    | 3                                         | –     | –    |
| xfdi(lag)   | 3             | –    | –             | –    | 3                                         | –     | 3/3  |
| Xrgdp(lag)  | 2             | 2    | –             | –    | 4                                         | –     | 2/4  |

Developed Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 4 | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|--------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade | –             | –    | –             | 3    | 3                                         | –     | –    |
| Xfdi   | 3             | –    | –             | –    | 3                                         | –     | 3/3  |
| Xrgdp  | –             | 4    | –             | –    | 4                                         | –     | –    |

Developed Countries Regression Coefficients on variables explaining Log (Consumer Price Index)

| Year 5      | - significant | - ns | + significant | + ns | No of equations in which variable is used | + sig | -sig |
|-------------|---------------|------|---------------|------|-------------------------------------------|-------|------|
| Xtrade(lag) | –             | –    | 1             | 2    | 3                                         | 1/3   | –    |
| xfdi(lag)   | 3             | –    | –             | –    | 3                                         | –     | 3/3  |
| Xrgdp(lag)  | 2             | –    | –             | –    | 4                                         | –     | –    |

Source : Tables 4a to 4f in Annex

## 8. Conclusion

This paper has tried to examine the effects of openness on wages in developing countries and developed economies separately. We have found that it is problematic to generalise on the basis of all country samples, as developing and developed economy results do differ in important respects. We also recognized that, unlike developed economies, in developing countries organized sectors cover only *parts* of the total labour force, and those workers who may be directly affected by openness in first-rounds are likely to constitute low percentages of that labour force which is organized. Second-round effects can take place through growth on a wider set of workers, if growth does ensue as a result of openness. These features, especially in the context of developing economies have to be recognized at the outset with the accompanying corollary that what openness does for workers outside the organized sector, which covers most of the working poor, is a separate matter.

We thus take the view that in developing countries the wider effect of openness even on the wages of “all” organized wage workers (reflected in our data base) cannot be ascertained by only looking at wages of some “sections” of waged workforces directly affected by trade and FDI. It may be even more inappropriate to take the “average wage” of such a subsection of a trade-affected sector in order to infer something about wages in general in the economy. However we often find that “average” wages of selected sectors or their subsections (e.g. of manufacturing workers or manufacturing workers in some traded sectors) are taken as being representative of the “economy wide” wage. There is no *apriori* reason why these wages or their trends should be “representative” of all organised wages at all. Therefore despite the limitation of not having detailed wage and employment data that is sectorally matched, which would undoubtedly give a better assessment of the effects on wage labour, it is still important, wherever possible- to not only examine wages of as many sectors and occupations, but do so over time lags since trade and FDI can affect wages through growth. The vast ILO data set on wages allows us the possibility to use wage data in this manner.

The main aim of the investigations in this paper has been to form some valid general expectations. Despite limitations that cross-country analyses pose, one important role they can perform well is precisely in the formation of such general expectations. The issue of the relevance of such an expectation – when properly formed – for policy advice in a country context is a separate one. Here we undoubtedly need to ask similar and more pointed questions in the particular country under examination with added policy indicators introduced in the analysis. While the formation of a general expectation is no substitute for case study prior to proffering policy advice, it is not without value to have an informed expectation at a general level either. The view which is taken here is that it is useful to form such a big picture and that cross country analysis with all its limitations allows for this possibility. In this paper we have looked at two related questions at such a general level. First, what do more trade openness and FDI flows do to real wage rates and to the dispersion of these wage rates; and second, what do they do to growth? We have also tried to elaborate further on some results that we get on the above questions.

In a typical developing economy increased openness will not enhance wage rates directly and may even produce (temporary) declines in real wage rates, as well as increase dispersions across wage rates. It *could* however also generate economic growth which over time would allow some recovery of wages from the initial damage and reduce wage dispersions. While it seems plausible to suggest that better social institutions may facilitate this wage recovery, we find that the impact of labour market institutions and civil liberties on wages- given the extent of openness and level of national income- seem either to be non existent or perverse. This is an area that requires further investigation. On the other hand, it is quite clear that despite the positive effect of openness on growth and that of growth on wages, the recovery from initial damage never

quite proceeds in to full fledged enhancement of real wages as a result of openness. While the explanation for the initial negative effect on real wages in the developing world may well have something to do with the instability associated with sectoral demand shifts and their effects on wages, but it may also importantly lie in the effect that increased openness has on consumer prices in the short run. While the particular ways in which this may happen in developing countries should be subject to more detailed analysis and case study, it seems that this is probably a better general explanation of the short run damage to the real wage regime with respect to openness in the developing world.

On the other hand in the developed world, wage earners in general will gain in the medium run with enhanced trade, and wage dispersions in these countries will not increase and probably decline as a result of openness. As long as social welfare mechanisms maintain the unemployed and continue to absorb those who suffer the temporary wage shocks, the ultimate wage gain is clearer in industrialised economies. It is also likely that the explanation for short run real wage declines is more related to demand driven labour market adjustments, since the effect of openness, especially of FDI flows seems to be in lowering and not in increasing consumer prices.

On the basis of these findings a few things can be suggested. First, that possible negative wage effects associated with openness are likely to be temporary everywhere, and in developing countries may be related to general effects of opening up on prices as opposed wage cutting behaviour by firms. However, temporary as this may be, it cannot be implied that over time future benefits associating openness to wages will obtain across the board in the developing world. This is an inappropriate generalisation since it is driven by the experience of the developed economies. In fact the negative shocks on the wage regime may be more lasting precisely in those parts of the developing world where liberalisation has been rushed and growth has been weak, and the ability of countries to deal with these adversities may also be seriously limited precisely by the larger agenda of economic reforms. It can also be argued that openness would increase wage dispersion in developing countries while the evidence for this in developed economies is the opposite. In short the effects of openness on the wage regime are comparatively better in developed economies, even though in developing economies some of the adverseness, though serious, is of a temporary nature.

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## **ANNEX: T A B L E S**

Table 1a. Fixed effects regression (same period): Dependent variable: Level of wages (continued)

|                                        | World                   | Developing              | Developed              | World                   | Developing              | Developed               | World                  | Developing             | Developed              | World                   | Developing              | Developed              | World                  | Developing             | Developed               |
|----------------------------------------|-------------------------|-------------------------|------------------------|-------------------------|-------------------------|-------------------------|------------------------|------------------------|------------------------|-------------------------|-------------------------|------------------------|------------------------|------------------------|-------------------------|
|                                        | 1                       | 2                       | 3                      | 4                       | 5                       | 6                       | 7                      | 8                      | 9                      | 10                      | 11                      | 12                     | 13                     | 14                     | 15                      |
| X Trade                                | -0.36453<br>(0.02068)** | -0.27093<br>(0.02581)** | -0.2143<br>(0.03471)** |                         |                         |                         |                        |                        |                        | -0.23173<br>(0.02244)** | -0.23059<br>(0.02772)** | 0.14029<br>(0.03858)** |                        |                        |                         |
| X FDI                                  |                         |                         |                        | -0.10358<br>(0.00625)** | -0.08622<br>(0.00805)** | -0.09323<br>(0.00950)** |                        |                        |                        |                         |                         |                        | -0.0255<br>(0.00671)** | -0.01018<br>(0.00853)  | -0.04254<br>(0.01045)** |
| X RGDP                                 |                         |                         |                        |                         |                         |                         | 0.25775<br>(0.00575)** | 0.26878<br>(0.00760)** | 0.14269<br>(0.00807)** | 0.24753<br>(0.00583)**  | 0.26051<br>(0.00766)**  | 0.14801<br>(0.00820)** | 0.27589<br>(0.00613)** | 0.31305<br>(0.00795)** | 0.09676<br>(0.00865)**  |
| FACB Weighted                          |                         |                         |                        |                         |                         |                         |                        |                        |                        |                         |                         |                        |                        |                        |                         |
| FH Civil liberties                     |                         |                         |                        |                         |                         |                         |                        |                        |                        |                         |                         |                        |                        |                        |                         |
| UD - Percentage unionized labour force |                         |                         |                        |                         |                         |                         |                        |                        |                        |                         |                         |                        |                        |                        |                         |
| Observations                           | 61237                   | 40600                   | 20637                  | 56320                   | 37198                   | 19122                   | 53326                  | 34542                  | 18784                  | 53247                   | 34463                   | 18784                  | 48919                  | 31572                  | 17347                   |
| R-squared                              | 0.77                    | 0.6                     | 0.62                   | 0.77                    | 0.6                     | 0.63                    | 0.78                   | 0.62                   | 0.63                   | 0.78                    | 0.63                    | 0.63                   | 0.78                   | 0.63                   | 0.63                    |

Standard error in parentheses

\* significant at less than 10%, \*\* less than 5%, \*\*\*less than 1%

Selected definitions: X Trade: Trade/GDP ratio transformed for normalization  
X FDI: FDI/GDP ratio transformed for normalization  
X RGDP: Real GDP per capita transformed for normalization  
X pppcw: Wage ppp consumption adjusted and transformed for normalization  
For definitions of FACB , Unionisation (UD), and FH Civil Liberties see text.

Note: All regressions in Tables 1 and 2 have country and year effects.

The R-sq (within group): where year is the group variable (FE within year, year specific effect) and there is a dummy for each country

Coefficients: country is the group variable (FE within country, this is the standard FE but with a dummy for the year)

When qualitative variables ( FACB and FH Civil Liberties) are introduced (in some equation after equation 18) both coefficients and R-sq are based on year group variable.  
(otherwise the qualitative variable gets dropped from the regression) .

Table 1a. Fixed effects regression (same period): Dependent variable: Level of wages

|                                        | World                   | Developing              | Developed              | World                   | Developing             | Developed               | World                   | Developing              | Developed               | World                   | Developing              | Developed              | World                   | Developing              | Developed               |
|----------------------------------------|-------------------------|-------------------------|------------------------|-------------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|------------------------|-------------------------|-------------------------|-------------------------|
|                                        | 16                      | 17                      | 18                     | 19                      | 20                     | 21                      | 22                      | 23                      | 24                      | 25                      | 26                      | 27                     | 28                      | 29                      | 30                      |
| X Trade                                | -0.37487<br>(0.02383)** | -0.37207<br>(0.02903)** | -0.00483<br>-0.04565   | 0.0369<br>(0.04163)     | -0.09277<br>(0.12078)  | -0.15476<br>(0.05006)** | -0.35297<br>(0.02413)** | -0.37906<br>(0.02965)** | -0.00483<br>(0.04565)   | -0.34529<br>(0.02412)** | -0.37126<br>(0.02959)** | -0.00483<br>(0.04565)  | 0.0369<br>(0.04163)     | -0.09277<br>(0.12078)   | -0.15476<br>(0.05006)** |
| X FDI                                  | -0.01342<br>(0.00674)*  | -0.00039<br>-0.00854    | -0.0424<br>(0.01054)** | -0.00156<br>(0.01135)   | 0.00354<br>(0.03081)   | -0.02354<br>(0.01133)*  | 0.00438<br>(0.00682)    | 0.01982<br>(0.00877)*   | -0.0424<br>(0.01054)**  | 0.00219<br>(0.00682)    | 0.01703<br>(0.00874)    | -0.0424<br>(0.01054)** | -0.00156<br>(0.01135)na | 0.00354<br>(0.03081)    | -0.02354<br>(0.01133)*  |
| X RGDP                                 | 0.25922<br>(0.00621)**  | 0.3015<br>(0.00798)**   | 0.09643<br>(0.00919)** | 0.15066<br>(0.00922)**  | 0.35552<br>(0.02894)** | 0.05393<br>(0.00999)**  | 0.25545<br>(0.00621)**  | 0.30072<br>(0.00806)**  | 0.09643<br>(0.00919)**  | 0.25537<br>(0.00621)**  | 0.30164<br>(0.00806)**  | 0.09643<br>(0.00919)** | 0.15066<br>(0.00922)**  | 0.35552<br>(0.02894)**  | 0.05393<br>(0.00999)**  |
| FACB Weighted                          |                         |                         |                        |                         |                        |                         | -0.05589<br>(0.00815)** | -0.04765<br>(0.00940)** | -0.05135<br>(0.00424)** |                         |                         |                        | -0.09958<br>(0.00988)** | 0.05552<br>(0.02966)    | -0.01567<br>(0.00471)** |
| FH Civil liberties                     |                         |                         |                        |                         |                        |                         |                         |                         |                         | -0.02337<br>(0.00513)** | 0.01538<br>(0.0102)     | 0.04773<br>(0.00666)** | 0.06263<br>(0.01016)**  | -0.08291<br>(0.02372)** | 0.07405<br>(0.00820)**  |
| UD - Percentage unionized labour force |                         |                         |                        | -0.06678<br>(0.01968)** | -0.1323<br>(0.05565)*  | -0.04793<br>(0.01905)*  |                         |                         |                         |                         |                         |                        | -0.06678<br>(0.01968)** | -0.1323<br>(0.05565)*   | -0.04793<br>(0.01905)*  |
| Observations                           | 48919                   | 31572                   | 17347                  | 19612                   | 5125                   | 14487                   | 46739                   | 29392                   | 17347                   | 47278                   | 29931                   | 17347                  | 19612                   | 5125                    | 14487                   |
| R-squared                              | 0.78                    | 0.63                    | 0.63                   | 0.86                    | 0.71                   | 0.68                    | 0.79                    | 0.64                    | 0.63                    | 0.79                    | 0.64                    | 0.63                   | 0.86                    | 0.71                    | 0.68                    |

Standard error in parentheses

\* significant at less than 10%, \*\* less than 5%, \*\*\*less than 1%

Selected definitions: X Trade: Trade/GDP ratio transformed for normalization  
X FDI: FDI/GDP ratio transformed for normalization  
X RGDP: Real GDP per capita transformed for normalization  
X pppcw: Wage ppp consumption adjusted and transformed for normalization  
For definitions of FACB , Unionisation (UD), and FH Civil Liberties see text.

Note: All regressions in Tables 1 and 2 have country and year effects.

The R-sq (within group): where year is the group variable (FE within year, year specific effect) and there is a dummy for each country

Coefficients: country is the group variable (FE within country, this is the standard FE but with a dummy for the year)

When qualitative variables ( FACB and FH Civil Liberties) are introduced (in some equation after equation 18) both coefficients and R-sq are based on year group variable.  
(otherwise the qualitative variable gets dropped from the regression) .

Table 1b: Fixed effects regression (lagged): Dependent variable: Level of wages

|                                        | World                | Developing           | Developed              | World                   | Developing              | Developed               | World                   | Developing              | Developed                | World                  | Developing             | Developed              | World                   | Developing              | Developed               |
|----------------------------------------|----------------------|----------------------|------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--------------------------|------------------------|------------------------|------------------------|-------------------------|-------------------------|-------------------------|
|                                        | 1                    | 2                    | 3                      | 4                       | 5                       | 6                       | 7                       | 8                       | 9                        | 10                     | 11                     | 12                     | 13                      | 14                      | 15                      |
| X Trade lagged 3 years                 | 0.02988<br>(0.03895) | 0.07792<br>(0.04754) | 0.58210<br>(0.07107)** |                         |                         |                         |                         |                         |                          | 0.16169<br>(0.03945)** | 0.13732<br>(0.04827)** | 0.69421<br>(0.07110)** |                         |                         |                         |
| X FDI lagged 3 years                   |                      |                      |                        | -0.10339<br>(0.00624)** | -0.08614<br>(0.00803)** | -0.09287<br>(0.00946)** |                         |                         |                          |                        |                        |                        | -0.03846<br>(0.00729)** | -0.04617<br>(0.00925)** | -0.07319<br>(0.01130)** |
| X RGDP lagged 3 years                  |                      |                      |                        |                         |                         |                         | 0.35950<br>(0.01526)*** | 0.38726<br>(0.01933)*** | 0.21197<br>(0.029873)*** | 0.40467<br>(0.01187)** | 0.41387<br>(0.01545)** | 0.26281<br>(0.01838)** | 0.36222<br>(0.01261)**  | 0.38978<br>(0.01595)**  | 0.12245<br>(0.02030)**  |
| FACB Weighted                          |                      |                      |                        |                         |                         |                         |                         |                         |                          |                        |                        |                        |                         |                         |                         |
| FH Civil liberties                     |                      |                      |                        |                         |                         |                         |                         |                         |                          |                        |                        |                        |                         |                         |                         |
| UD - Percentage unionized labour force |                      |                      |                        |                         |                         |                         |                         |                         |                          |                        |                        |                        |                         |                         |                         |
| Observations                           | 52460                | 35077                | 17383                  | 56320                   | 37198                   | 19122                   | 51257                   | 33978                   | 17279                    | 50729                  | 33450                  | 17279                  | 47644                   | 31602                   | 16042                   |
| R-squared                              | 0.78                 | 0.62                 | 0.61                   | 0.77                    | 0.6                     | 0.63                    | 0.674                   | 0.49                    | 0.31                     | 0.79                   | 0.63                   | 0.61                   | 0.79                    | 0.63                    | 0.62                    |

Standard error in parentheses

\* significant at less than 10%, \*\* less than 5%, \*\*\*less than 1%

Selected definitions: X Trade: Trade/GDP ratio transformed for normalization  
X FDI: FDI/GDP ratio transformed for normalization  
X RGDP: Real GDP per capita transformed for normalization  
X pppcw: Wage ppp consumption adjusted and transformed for normalization  
For definitions of FACB, Unionization (UD), and FH Civil Liberties see text.

Note: All regressions in Tables 1 and 2 have country and year effects.

The R-sq (within group): where year is the group variable (FE within year, year specific effect) and there is a dummy for each country

Coefficients: country is the group variable (FE within country, this is the standard FE but with a dummy for the year)

When qualitative variables ( FACB and FH Civil Liberties) are introduced (in some equation after equation 18) both coefficients and R-sq are based on year group variable.

(otherwise the qualitative variable gets dropped from the regression) .

Table 1b: Fixed effects regression (lagged): Dependent variable: Level of wages (continued)

|                                        | World                    | Developing              | Developed                | World                   | Developing             | Developed               | World                  | Developing             | Developed               | World                    | Developing               | Developed                | World                    | Developing              | Developed                |
|----------------------------------------|--------------------------|-------------------------|--------------------------|-------------------------|------------------------|-------------------------|------------------------|------------------------|-------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|--------------------------|
|                                        | 16                       | 17                      | 18                       | 19                      | 20                     | 21                      | 22                     | 23                     | 24                      | 25                       | 26                       | 27                       | 28                       | 29                      | 30                       |
| X Trade lagged 3 years                 | -0.07636<br>(0.05521)    | -0.13845<br>(0.06507)** | 0.35989<br>(0.13229)***  | 0.29747<br>(0.08114)**  | 0.41858<br>(0.24472)   | 0.00582<br>(0.09039)    | 0.09427<br>(0.04255)*  | 0.07139<br>(0.05218)   | 0.38036<br>(0.08022)**  | 0.01688<br>(0.05586)     | -0.06284<br>(0.06606)    | 0.35989<br>(0.13229)***  | 0.34627<br>(0.11768)***  | 0.23167<br>(0.31699)    | 0.01655<br>(0.14846)     |
| X FDI lagged 3 years                   | -0.03256<br>(0.00978)*** | -0.03010<br>(0.01210)** | -0.09137<br>(0.01899)*** | 0.00991<br>(0.01163)    | 0.15446<br>(0.03190)** | -0.05410<br>(0.01207)** | 0.00496<br>(0.00751)   | 0.00879<br>(0.00971)   | -0.06271<br>(0.01151)** | -0.01027<br>(0.00996)    | -0.00571<br>(0.01244)    | -0.09136<br>(0.01899)*** | -0.01089<br>(0.01688)    | 0.15669<br>(0.04177)*** | -0.08059<br>(0.01982)*** |
| X RGDP lagged 3 years                  | 0.41521<br>(0.01741)***  | 0.47925<br>(0.02134)*** | 0.08299<br>(0.03414)**   | 0.28458<br>(0.02335)**  | 0.19796<br>(0.08836)*  | 0.12223<br>(0.02347)**  | 0.42788<br>(0.01339)** | 0.47019<br>(0.01707)** | 0.14311<br>(0.02075)**  | 0.41196<br>(0.01739)***  | 0.47731<br>(0.02137)***  | 0.08299<br>(0.03414)**   | 0.28337<br>(0.03381)***  | 0.32189<br>(0.11564)*** | 0.06622<br>(0.03843)*    |
| FACB Weighted                          |                          |                         |                          |                         |                        |                         | -0.00777<br>(0.00923)  | -0.00256<br>(0.01065)  | -0.02852<br>(0.00385)** |                          |                          |                          | -0.14887<br>(0.01496)*** | -0.06733<br>(0.04993)   | -0.03987<br>(0.00943)*** |
| FH Civil liberties                     |                          |                         |                          |                         |                        |                         |                        |                        |                         | -0.06370<br>(0.00836)*** | -0.07498<br>(0.00973)*** | 0.08728<br>(0.00740)***  | 0.16087<br>(0.00957)***  | -0.02941<br>(0.04520)   | 0.07938<br>(0.00983)***  |
| UD - Percentage unionized labour force |                          |                         |                          | -0.05924<br>(0.01823)** | 0.00535<br>(0.06100)   | -0.04825<br>(0.01732)** |                        |                        |                         |                          |                          |                          | -0.04108<br>(0.02646)    | 0.13424<br>(0.07953)*** | -0.05262<br>(0.02846)*   |
| Observations                           | 47116                    | 31074                   | 16042                    | 17891                   | 4923                   | 12968                   | 45103                  | 29061                  | 16042                   | 45931                    | 29889                    | 16042                    | 17891                    | 4923                    | 12968                    |
| R-squared                              | 0.67                     | 0.50                    | 0.30                     | 0.58                    | 0.48                   | 0.69                    | 0.79                   | 0.63                   | 0.62                    | 0.68                     | 0.50                     | 0.29                     | 0.75                     | 0.59                    | 0.35                     |

Standard error in parentheses

\* significant at less than 10%, \*\* less than 5%, \*\*\*less than 1%

Selected definitions: X Trade: Trade/GDP ratio transformed for normalization  
X FDI: FDI/GDP ratio transformed for normalization  
X RGDP: Real GDP per capita transformed for normalization  
X pppcw: Wage ppp consumption adjusted and transformed for normalization  
For definitions of FACB , Unionisation (UD), and FH Civil Liberties see text.

Note: All regressions in Tables 1 and 2 have country and year effects.

The R-sq (within group): where year is the group variable (FE within year, year specific effect) and there is a dummy for each country

Coefficients: country is the group variable (FE within country, this is the standard FE but with a dummy for the year)

When qualitative variables ( FACB and FH Civil Liberties) are introduced (in some equation after equation 18) both coefficients and R-sq are based on year group variable.

(otherwise the qualitative variable gets dropped from the regression) .

Table 2a. Fixed effect regressions (same period). Dependent variable: wage dispersion (X pppcw)

|                                        | World                   | Developing              | Developed             | World                | Developing           | Developed             | World                    | Developing            | Developed             | World                   | Developing               | Developed             | World                    | Developing               | Developed             |
|----------------------------------------|-------------------------|-------------------------|-----------------------|----------------------|----------------------|-----------------------|--------------------------|-----------------------|-----------------------|-------------------------|--------------------------|-----------------------|--------------------------|--------------------------|-----------------------|
|                                        | 1                       | 2                       | 3                     | 4                    | 5                    | 6                     | 7                        | 8                     | 9                     | 10                      | 11                       | 12                    | 13                       | 14                       | 15                    |
| (mean) X Trade                         | 0.23453<br>[0.06029]*** | 0.28203<br>[0.08305]*** | 0.03616<br>[0.0.6876] |                      |                      |                       |                          |                       |                       | 0.19610<br>[0.06310]*** | 0.24575<br>[0.08461]***  | -0.00980<br>[0.07716] |                          |                          |                       |
| (mean) X FDI                           |                         |                         |                       | 0.00658<br>[0.01961] | 0.00520<br>[0.02852] | -0.00046<br>[0.01857] |                          |                       |                       |                         |                          |                       | -0.00099<br>[0.02002]    | -0.00218<br>[0.02857]    | -0.01051<br>[0.02036] |
| (mean) X RGDP                          |                         |                         |                       |                      |                      |                       | -0.06620<br>[0.01524]*** | -0.08445<br>[0.02217] | -0.02015<br>[0.01402] | -0.05701<br>[0.01526]   | -0.07457<br>[0.02187]*** | -0.02064<br>[0.01463] | -0.06163<br>[0.01665]*** | -0.08027<br>[0.02512]*** | -0.02179<br>[0.01436] |
| FACB Weighted                          |                         |                         |                       |                      |                      |                       |                          |                       |                       |                         |                          |                       |                          |                          |                       |
| FH Civil liberties                     |                         |                         |                       |                      |                      |                       |                          |                       |                       |                         |                          |                       |                          |                          |                       |
| UD - Percentage unionized labour force |                         |                         |                       |                      |                      |                       |                          |                       |                       |                         |                          |                       |                          |                          |                       |
| Observations                           | 328                     | 214                     | 114                   | 304                  | 193                  | 111                   | 312                      | 202                   | 110                   | 312                     | 202                      | 110                   | 291                      | 184                      | 107                   |
| R-squared                              | 0.8                     | 0.74                    | 0.93                  | 0.78                 | 0.71                 | 0.93                  | 0.8                      | 0.73                  | 0.93                  | 0.81                    | 0.75                     | 0.93                  | 0.78                     | 0.71                     | 0.92                  |

Standard error in parentheses

\* significant at less than 10%, \*\* less than 5%, \*\*\*less than 1%

Selected definitions: X Trade: Trade/GDP ratio transformed for normalization  
 X FDI: FDI/GDP ratio transformed for normalization  
 X RGDP: Real GDP per capita transformed for normalization  
 X pppcw: Wage ppp consumption adjusted and transformed for normalization  
 For definitions of FACB , Unionisation (UD), and FH Civil Liberties see text.

Note: All regressions in Tables 1 and 2 have country and year effects.

The R-sq (within group): where year is the group variable (FE within year, year specific effect) and there is a dummy for each country

Coefficients: country is the group variable (FE within country, this is the standard FE but with a dummy for the year)

When qualitative variables (FACB and FH Civil Liberties) are introduced (in some equation after equation 18) both coefficients and R-sq are based on year group variable.

(otherwise the qualitative variable gets dropped from the regression).

Table 2a. Fixed effect regressions (same period). Dependent variable: wage dispersion (X pppcw)

|                                        | World                    | Developing              | Developed             | World                    | Developing               | Developed              | World                 | Developing   | Developed               | World                    | Developing               | Developed                | World                 | Developing | Developed               |
|----------------------------------------|--------------------------|-------------------------|-----------------------|--------------------------|--------------------------|------------------------|-----------------------|--------------|-------------------------|--------------------------|--------------------------|--------------------------|-----------------------|------------|-------------------------|
|                                        | 16                       | 17                      | 18                    | 19                       | 20                       | 21                     | 22                    | 23           | 24                      | 25                       | 26                       | 27                       | 28                    | 29         | 30                      |
| (mean) X Trade                         | 0.21040<br>[0.07124]***  | 0.27095<br>[0.09822]*** | -0.01374<br>[0.01882] | 0.22253<br>[0.07183]***  | 0.28352<br>[0.09953]***  | -0.01374<br>[0.08182]  | 0.14824<br>[0.09537]  |              | -0.02128<br>[0.09992]   | 0.21975<br>[0.07041]***  | 0.28119<br>[0.09858]***  | -0.01374<br>[0.08182]    | 0.14824<br>[0.09537]  |            | -0.02128<br>[0.09992]   |
| (mean) X FDI                           | -0.01489<br>[0.02022]    | -0.02258<br>[0.02880]   | -0.01026<br>[0.04047] | -0.01137<br>[0.02048]    | -0.01724<br>[0.02953]    | -0.01026<br>[0.02054]  | -0.03948<br>[0.02868] |              | -0.02047<br>[0.02347]   | -0.01083<br>[0.02038]    | -0.01664<br>[0.29265]    | -0.01026<br>[0.02054]    | -0.03948<br>[0.02868] |            | -0.02047<br>[0.02347]   |
| (mean) X RGDP                          | -0.05347<br>[0.01659]*** | -0.07171<br>[0.02466]   | -0.02251<br>[0.01507] | -0.05492<br>[0.01666]*** | -0.07351<br>[0.02491]*** | -0.02251<br>[0.01507]  | -0.02005<br>[0.01967] |              | -0.02918<br>[0.01824]** | -0.05499<br>[0.01660]*** | -0.07380<br>[0.02471]*** | -0.02251<br>[0.01507]    | -0.02005<br>[0.01967] |            | -0.02918<br>[0.01824]   |
| FACB Weighted                          |                          |                         |                       | 0.00637<br>[0.01015]     | -0.00167<br>[0.01353]    | 0.00986<br>[0.00430]** |                       |              |                         |                          |                          |                          | 0.00892<br>[0.02039]  |            | 0.04239<br>[0.01557]*** |
| FH Civil liberties                     |                          |                         |                       |                          |                          |                        |                       |              |                         | 0.01933<br>[0.01294]***  | 0.00392<br>[0.012030]    | -0.03210<br>[0.01188]*** | 0.02047<br>[0.01267]  |            | -0.02087<br>[0.01413]   |
| UD - Percentage unionized labour force |                          |                         |                       |                          |                          |                        | 0.09515<br>[0.05442]* |              | 0.07267<br>[0.04343]*   |                          |                          |                          | 0.09515<br>[0.05442]* |            | 0.07267<br>[0.04343]*   |
| Observations                           | 291                      | 184                     | 107                   | 283                      | 176                      | 107                    | 118                   |              | 89                      | 286                      | 179                      | 107                      | 118                   |            | 89                      |
| R-squared                              | 0.79                     | 0.73                    | 0.92                  | 0.79                     | 0.73                     | 0.92                   | 0.87                  |              | 0.91                    | 0.79                     | 0.73                     | 0.92                     |                       |            | 0.91                    |
|                                        | insuff. obs.             |                         |                       |                          |                          |                        |                       | insuff. obs. |                         |                          |                          |                          |                       |            |                         |

Standard error in parentheses

\* significant at less than 10%, \*\* less than 5%, \*\*\*less than 1%

Selected definitions: X Trade: Trade/GDP ratio transformed for normalization  
 X FDI: FDI/GDP ratio transformed for normalization  
 X RGDP: Real GDP per capita transformed for normalization  
 X pppcw: Wage ppp consumption adjusted and transformed for normalization  
 For definitions of FACB, Unionisation (UD), and FH Civil Liberties see text.

Note: All regressions in Tables 1 and 2 have country and year effects.

The R-sq (within group): where year is the group variable (FE within year, year specific effect) and there is a dummy for each country

Coefficients: country is the group variable (FE within country, this is the standard FE but with a dummy for the year)

When qualitative variables ( FACB and FH Civil Liberties) are introduced (in some equation after equation 18) both coefficients and R-sq are based on year group variable.

(otherwise the qualitative variable gets dropped from the regression) .

Table 2b. Fixed effect regressions (lagged). Dependent variable: wage dispersion (sd Xpppcw)

|                                        | World        | Developing   | Developed    | World        | Developing   | Developed  | World        | Developing   | Developed    | World       | Developing  | Developed    | World       | Developing | Developed   |
|----------------------------------------|--------------|--------------|--------------|--------------|--------------|------------|--------------|--------------|--------------|-------------|-------------|--------------|-------------|------------|-------------|
|                                        | 1            | 2            | 3            | 4            | 5            | 6          | 7            | 8            | 9            | 10          | 11          | 12           | 13          | 14         | 15          |
| (mean) xtrd3                           | 0.28592      | 0.44898      | -0.29916     |              |              |            |              |              |              | 0.24197     | 0.39334     | -0.31116     |             |            |             |
|                                        | [0.11033]*** | [0.15611]*** | [0.11065]*** |              |              |            |              |              |              | [0.11423]** | [0.16280]** | [0.11248]*** |             |            |             |
| (mean) xfdi3                           |              |              |              | 0.04590      | 0.06864      | -0.03229   |              |              |              |             |             |              | 0.03981     | 0.06192    | -0.03880    |
|                                        |              |              |              | [0.01722]*** | [0.02476]*** | [0.01734]* |              |              |              |             |             |              | [0.01809]** | [0.02605]  | [0.01774]** |
| xrgdp3                                 |              |              |              |              |              |            | -1.77396     | -2.01433     | -0.78467     | -1.21577    | -1.35363    | -0.73844     | -0.98538    | -1.14104   | -0.91454    |
|                                        |              |              |              |              |              |            | [0.48826]*** | [0.67172]*** | [0.57195]*** | [0.49353]** | [0.67000]** | [0.54930]    | [0.53208]*  | [0.72833]  | [0.58191]   |
| FACB Weighted                          |              |              |              |              |              |            |              |              |              |             |             |              |             |            |             |
| FH Civil liberties                     |              |              |              |              |              |            |              |              |              |             |             |              |             |            |             |
| UD - Percentage unionized labour force |              |              |              |              |              |            |              |              |              |             |             |              |             |            |             |
| Observations                           | 298          | 194          | 104          | 277          | 176          | 101        | 290          | 187          | 103          | 287         | 184         | 103          | 269         | 169        | 100         |
| R-squared                              | 0.82         | 0.77         | 0.94         | 0.81         | 0.76         | 0.94       | 0.8          | 0.73         | 0.93         | 0.81        | 0.76        | 0.94         | 0.8         | 0.74       | 0.94        |

Standard error in parentheses

\* significant at less than 10%, \*\* less than 5%, \*\*\*less than 1%

Selected definitions: X Trade: Trade/GDP ratio transformed for normalization

X FDI: FDI/GDP ratio transformed for normalization

X RGDP: Real GDP per capita transformed for normalization

Sd X pppcw: standard deviation of X-transformed consumption ppp wages

For definitions of FACB, Unionisation (UD), and FH Civil Liberties see text.

Note: All regressions in Tables 1 and 2 have country and year effects.

The R-sq (within group): where year is the group variable (FE within year, year specific effect) and there is a dummy for each country

Coefficients: country is the group variable (FE within country, this is the standard FE but with a dummy for the year)

When qualitative variables ( FACB and FH Civil Liberties) are introduced (in some equation after equation 18) both coefficients and R-sq are based on year group variable.

(otherwise the qualitative variable gets dropped from the regression) .

Table 2b. Fixed effect regressions (lagged). Dependent variable: wage dispersion (sd Xpppcw)

|                                        | World                  | Developing            | Developed               | World                   | Developing             | Developed               | World                  | Developing             | Developed                | World                   | Developing  | Developed               | World                   | Developing  | Developed                |
|----------------------------------------|------------------------|-----------------------|-------------------------|-------------------------|------------------------|-------------------------|------------------------|------------------------|--------------------------|-------------------------|-------------|-------------------------|-------------------------|-------------|--------------------------|
|                                        | 16                     | 17                    | 18                      | 19                      | 20                     | 21                      | 22                     | 23                     | 24                       | 25                      | 26          | 27                      | 28                      | 29          | 30                       |
| (mean) xtrd3                           | 0.22747<br>[0.13331]*  | 0.38614<br>[0.19583]* | -0.26798<br>[0.11780]** | 0.25971<br>[0.13626]*   | 0.42040<br>[0.20143]** | -0.26798<br>[0.11680]** | 0.25966<br>[0.13592]*  | 0.42181<br>[0.20044]** | -0.26798<br>[0.11680]**  | -0.06891<br>[0.20019]   |             | -0.37374<br>[0.15548]** | -0.06891<br>[0.20018]   |             | -0.37374<br>[0.15478]**  |
| (mean) xfdi3                           | 0.02840<br>[0.19205]   | 0.04139<br>[0.02774]  | -0.03300<br>[0.01743]*  | 0.02456<br>[0.01958]    | 0.03660<br>[0.02861]   | -0.03300<br>[0.01743]*  | 0.02428<br>[0.01949]   | 0.03606<br>[0.02840]   | -0.03300<br>[0.01743]*   | -0.06230<br>[0.03041]** |             | -0.05394<br>[0.02237]** | -0.06230<br>[0.03041]** |             | -0.05394<br>[0.02237]**  |
| xrgdp3                                 | -0.90115<br>[0.53180]* | -0.99821<br>[0.72251] | -0.90874<br>[0.56584]   | -0.93577<br>[0.53455]*  | -1.03020<br>[0.73024]  | -0.90874<br>[0.56584]   | -0.93812<br>[0.53313]* | -1.03341<br>[0.72686]  | -0.90874<br>[0.56584]    | -1.10349<br>[0.86219]   |             | -1.17074<br>[0.72327]   | -1.10349<br>[0.86214]   |             | -1.17074<br>[0.72327]    |
| FACB Weighted                          |                        |                       |                         | 0.04561<br>[0.01729]*** | 0.04413<br>[0.02207]** | 0.03304<br>[0.02128]    |                        |                        |                          |                         |             |                         | 0.06010<br>[0.02110]*** |             | 0.06526<br>[0.01236]***  |
| FH Civil liberties                     |                        |                       |                         |                         |                        |                         | -0.01254<br>[0.01591]  | -0.01725<br>[0.01912]  | -0.05206<br>[0.00927]*** |                         |             |                         | -0.01160<br>[0.01405]   |             | -0.03929<br>[0.01037]*** |
| UD - Percentage unionized labour force |                        |                       |                         |                         |                        |                         |                        |                        |                          | 0.05947<br>[0.05545]    |             | 0.02299<br>[0.03966]    | 0.05947<br>[0.05554]    |             | 0.02299<br>[0.03966]     |
| Observations                           | 269                    | 169                   | 100                     | 264                     | 164                    | 100                     | 266                    | 166                    | 100                      | 109                     |             | 81                      | 109                     |             | 81                       |
| R-squared                              | 0.8                    | 0.75                  | 0.94                    | 0.8                     | 0.75                   | 0.94                    | 0.8                    | 0.75                   | 0.94                     | 0.87                    |             | 0.93                    | 0.87                    |             | 0.93                     |
|                                        |                        |                       |                         |                         |                        |                         |                        |                        |                          |                         | insuff. obs |                         |                         | insuff. obs |                          |

Standard error in parentheses

\* significant at less than 10%, \*\* less than 5%, \*\*\*less than 1%

Selected definitions: X Trade: Trade/GDP ratio transformed for normalization

X FDI: FDI/GDP ratio transformed for normalization

X RGDP: Real GDP per capita transformed for normalization

Sd X pppcw: standard deviation of X-transformed consumption ppp wages

For definitions of FACB , Unionisation (UD), and FH Civil Liberties see text.

Note: All regressions in Tables 1 and 2 have country and year effects.

The R-sq (within group): where year is the group variable (FE within year, year specific effect) and there is a dummy for each country

Coefficients: country is the group variable (FE within country, this is the standard FE but with a dummy for the year)

When qualitative variables (FACB and FH Civil Liberties) are introduced (in some equation after equation 18) both coefficients and R-sq are based on year group variable.

(otherwise the qualitative variable gets dropped from the regression) .

Table 3a. Openness and Growth: The short run. Level. 5 year averages.

|                            | World                      | Developing                 | Developed                  | World                      | Developing                 | Developed                  |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
|                            | OLS                        | OLS                        | OLS                        | OLS                        | OLS                        | OLS                        |
|                            | 1                          | 2                          | 3                          | 4                          | 5                          | 6                          |
|                            | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  |
| Middle income<br>log/level | 1.017332<br>(0.005366) *** | 1.007871<br>(0.010253) *** | 0.987722<br>(0.011392) *** | 1.014429<br>(0.005410) *** | 1.009781<br>(0.010597) *** | 0.986016<br>(0.012569) *** |
| Final trade/GDP<br>level   | -0.000108<br>(0.000313)    | -0.000458<br>(0.000473)    | 0.000721<br>(0.000196) *** |                            |                            |                            |
| Middle trade/GDP<br>level  |                            |                            |                            | -0.000318<br>(0.000338)    | -0.000665<br>(0.000466)    | 0.000613<br>(0.000307)     |
| Final FDI/GDP<br>level     | 0.011857<br>(0.004316) *** | 0.013738<br>(0.004542) *** | -0.002765<br>(0.004284)    |                            |                            |                            |
| Middle FDI/GDP<br>level    |                            |                            |                            | 0.023701<br>(0.007208) *** | 0.027223<br>(0.007873) *** | -0.002985<br>(0.009936)    |
| Prob > F                   | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      |
| R-squared                  | 0.986                      | 0.9678                     | 0.9905                     | 0.9884                     | 0.9737                     | 0.9893                     |
| Observations               | 304                        | 247                        | 57                         | 289                        | 233                        | 56                         |

Note: In Tables 3 we use panel data and have four level data of five year averages (period average 1=1980-85, period average 2=1985-90, period average 3=1990-95, period average 4=1995-2000) and three change data between the level average data. Therefore change 21 = level period average 2- level period average 1 / level period average 1; and so on for change 32 and change 43. The period classification of final, middle and initial is used in the reported variables in regressions because for maximizing the use of the data, the dependent variable can be for a different periods. The classification of final, middle, initial therefore refers to sequence. In other words for example when the dependent variable is for period 4, the middle level refers to the period 3 and when the dependent variable is for period 3 the middle level refers to period 2. In change analysis, in Tables 3c and 3d, when the final period change dependent variable is for period 43, the middle level change refers to period 32, and the initial level refers to the period 1. The top figure reported is the coefficient, the bottom figure is the robust standard errors (White Estimators) and the asterisk suggests significance, \*\*\* less than 1%, \*\* less than 5% and \* less than 1%.

Table 3a. Openness and Growth: The short run. Level. 5 year averages (continued)

|                            | World                      | Developing                 | Developed                  | World                      | Developing                 | Developed                  | World                      | Developing                 | Developed                  | World                      | Developing                 | Developed                  |
|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|----------------------------|
|                            | OLS                        | OLS                        | OLS                        | OLS                        | OLS                        | OLS                        | OLS                        | OLS                        | OLS                        | OLS                        | OLS                        | OLS                        |
|                            | 7                          | 8                          | 9                          | 10                         | 11                         | 12                         | 13                         | 14                         | 15                         | 16                         | 17                         | 18                         |
|                            | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  |
| Middle income<br>log/level | 1.015296<br>(0.005810) *** | 1.004456<br>(0.011703) *** | 0.985228<br>(0.012154) *** | 1.014043<br>(0.005580) *** | 1.010439<br>(0.010612) *** | 0.986974<br>(0.011162) *** | 1.018056<br>(0.005719) *** | 1.005911<br>(0.010297) *** | 0.979601<br>(0.014587) *** | 1.015597<br>(0.005773) *** | 1.006586<br>(0.010624) *** | 0.985331<br>(0.015134) *** |
| Final trade/GDP<br>level   | 0.000596<br>(0.000235) **  | 0.000579<br>(0.000451)     | 0.000658<br>(0.000109) *** |                            |                            |                            |                            |                            |                            |                            |                            |                            |
| Middle trade/GDP<br>level  |                            |                            |                            | 0.000491<br>(0.000169) *** | 0.000403<br>(0.000301)     | 0.000587<br>(0.000123) *** |                            |                            |                            |                            |                            |                            |
| Final FDI/GDP<br>level     |                            |                            |                            |                            |                            |                            | 0.011626<br>(0.003257) *** | 0.012252<br>(0.003411) *** | 0.008267<br>(0.003941) **  |                            |                            |                            |
| Middle FDI/GDP<br>level    |                            |                            |                            |                            |                            |                            |                            |                            |                            | 0.022346<br>(0.005174) *** | 0.024064<br>(0.006060) *** | 0.014041<br>(0.004545) *** |
| Prob > F                   | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                      |
| R-squared                  | 0.9864                     | 0.9689                     | 0.9876                     | 0.987                      | 0.9705                     | 0.9863                     | 0.9832                     | 0.9614                     | 0.9876                     | 0.9853                     | 0.966                      | 0.9877                     |
| Observations               | 332                        | 265                        | 67                         | 323                        | 257                        | 66                         | 313                        | 254                        | 59                         | 298                        | 240                        | 58                         |

Table 3b. Openness and Growth: The medium run. Level. 10 year averages

|                                     | World                           | Developing                      | Developed                       | World                           | Developing                      | Developed                       |
|-------------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
|                                     | OLS                             | OLS                             | OLS                             | OLS                             | OLS                             | OLS                             |
|                                     | 1                               | 2                               | 3                               | 4                               | 5                               | 6                               |
|                                     | Final income<br>(90s) log/level | Final income<br>(90s) log/level | Final income<br>(90s) log/level | Final income<br>(90s) log/level | Final income<br>(90s) log/level | Final income<br>(90s) log/level |
| Middle income<br>(80s)<br>log/level | 1.030910<br>(0.010872) ***      | 1.009359<br>(0.023068) ***      | 0.999178<br>(0.024999) ***      | 1.029683<br>(0.010246) ***      | 1.029872<br>(0.022435) ***      | 0.989590<br>(0.038011) ***      |
| Trade/GDP (90s)<br>level            | 0.000183<br>(0.000587)          | -0.000387<br>(0.000870)         | 0.001610<br>(0.000402) ***      |                                 |                                 |                                 |
| Trade/GDP (80s)<br>level            |                                 |                                 |                                 | 0.000259<br>(0.000558)          | -0.000105<br>(0.000731)         | 0.000796<br>(0.000757)          |
| FDI/GDP (90s)<br>level              | 0.022978<br>(0.008029) ***      | 0.029817<br>(0.009573) ***      | -0.009452<br>(0.009979)         |                                 |                                 |                                 |
| FDI/GDP (80s)<br>Level              |                                 |                                 |                                 | 0.038819<br>(0.008298) ***      | 0.043794<br>(0.010967) ***      | 0.002018<br>(0.033017)          |
| Prob > F                            | 0 ***                           | 0 ***                           | 0 ***                           | 0 ***                           | 0 ***                           | 0 ***                           |
| R-squared                           | 0.9772                          | 0.9457                          | 0.9851                          | 0.9848                          | 0.9632                          | 0.9792                          |
| Observations                        | 130                             | 102                             | 28                              | 121                             | 93                              | 28                              |

Table 3b. Openness and Growth: The medium run. Level 10 year averages (continued)

|                          | World<br>OLS               | Developing<br>OLS         | Developed<br>OLS           | World<br>OLS               | Developing<br>OLS         | Developed<br>OLS           | World<br>OLS               | Developing<br>OLS          | Developed<br>OLS          | World<br>OLS               | Developing<br>OLS          | Developed<br>OLS           |
|--------------------------|----------------------------|---------------------------|----------------------------|----------------------------|---------------------------|----------------------------|----------------------------|----------------------------|---------------------------|----------------------------|----------------------------|----------------------------|
|                          | 7                          | 8                         | 9                          | 10                         | 11                        | 12                         | 13                         | 14                         | 15                        | 16                         | 17                         | 18                         |
|                          | Final income<br>log/level  | Final income<br>log/level | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level | Final income<br>log/level  | Final income<br>log/level  | Final income<br>log/level  |
| Middle income<br>(80s)   | 1.031529                   | 1.008756                  | 0.996006                   | 1.026646                   | 1.034668                  | 0.980433                   | 1.031922                   | 1.004562                   | 0.976756                  | 1.036977                   | 1.036207                   | 0.997178                   |
| log/level                | (0.010705) ***             | (0.021904) ***            | (0.027014) ***             | (0.010948) ***             | (0.020752) ***            | (0.036711) ***             | (0.011509) ***             | (0.024312) ***             | (0.036608) ***            | (0.012552) ***             | (0.024583) ***             | (0.038659) ***             |
| Trade/GDP (90s)<br>level | 0.001250<br>(0.000289) *** | 0.001291<br>(0.005670) ** | 0.001265<br>(0.000153) *** |                            |                           |                            |                            |                            |                           |                            |                            |                            |
| Trade/GDP (80s)<br>level |                            |                           |                            | 0.001245<br>(0.000355) *** | 0.001134<br>(0.000524) ** | 0.001145<br>(0.000387) *** |                            |                            |                           |                            |                            |                            |
| FDI/GDP (90s)<br>level   |                            |                           |                            |                            |                           |                            | 0.035982<br>(0.012289) *** | 0.040434<br>(0.014623) *** | 0.018254<br>(0.010695) *  |                            |                            |                            |
| FDI/GDP (80s)<br>Level   |                            |                           |                            |                            |                           |                            |                            |                            |                           | 0.039446<br>(0.005165) *** | 0.040742<br>(0.007236) *** | 0.029725<br>(0.008171) *** |
| Prob > F                 | 0 ***                      | 0 ***                     | 0 ***                      | 0 ***                      | 0 ***                     | 0 ***                      | 0 ***                      | 0 ***                      | 0 ***                     | 0 ***                      | 0 ***                      | 0 ***                      |
| R-squared                | 0.9779                     | 0.9475                    | 0.9837                     | 0.9831                     | 0.9628                    | 0.9597                     | 0.9713                     | 0.9326                     | 0.9759                    | 0.9749                     | 0.9373                     | 0.9769                     |
| Observations             | 142                        | 109                       | 33                         | 135                        | 103                       | 32                         | 136                        | 107                        | 29                        | 124                        | 95                         | 29                         |

Table 3c. Openness and Growth: Change on change. The short run. 5 year averages.

|                                 | World<br>OLS                 | Developing<br>OLS            | Developed<br>OLS            | World<br>OLS                 | Developing<br>OLS            | Developed<br>OLS             | World<br>OLS                 | Developing<br>OLS            | Developed<br>OLS          | World<br>OLS                 | Developing<br>OLS            | Developed<br>OLS          |
|---------------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|---------------------------|------------------------------|------------------------------|---------------------------|
|                                 | 1                            | 2                            | 3                           | 4                            | 5                            | 6                            | 7                            | 8                            | 9                         | 10                           | 11                           | 12                        |
|                                 | Last income<br>log/change    | Last income<br>log/change    | Last income<br>log/change   | Last income<br>log/change    | Last income<br>log/change    | Last income<br>log/change    | Last income<br>log/change    | Last income<br>log/change    | Last income<br>log/change | Last income<br>log/change    | Last income<br>log/change    | Last income<br>log/change |
| Previous income<br>log/change   | 0.7379973<br>(0.0801644) *** | 0.7506555<br>(0.0823512) *** | 0.3105231<br>(0.1498193) ** | 0.6423905<br>(0.0693285) *** | 0.6519246<br>(0.0715661) *** | 0.4482156<br>(0.1434499) *** | 0.6675476<br>(0.0726697) *** | 0.6896009<br>(0.0764931) *** | 0.1807342<br>(0.1773392)  | 0.6019328<br>(0.0729370) *** | 0.6313971<br>(0.0752600) *** | 0.1499537<br>(0.1703929)  |
| Last Trade/GDP<br>change        | 0.0232883<br>(0.0092718) **  | 0.0232999<br>(0.0096686) **  | 0.0170554<br>(0.0138344)    |                              |                              |                              | 0.0152982<br>(0.0075178) **  | 0.0154300<br>(0.0077574) **  | 0.0110472<br>(0.0127472)  |                              |                              |                           |
| Previous<br>Trade/GDP<br>change |                              |                              |                             | 0.0048876<br>(0.0043542)     | 0.0044348<br>(0.0045914)     | 0.0160001<br>(0.0140188)     |                              |                              |                           | 0.0072872<br>(0.0039797) *   | 0.0071891<br>(0.0042100) *   | 0.0057261<br>(0.0121481)  |
| Last FDI/GDP<br>change          | -0.0000103<br>(0.0000094)    | -0.0000104<br>(0.0000097)    | -0.0002663<br>(0.0005601)   |                              |                              |                              |                              |                              |                           |                              |                              |                           |
| Previous<br>FDI/GDP<br>change   |                              |                              |                             | 0.0000110<br>(0.0000293)     | 0.0000112<br>(0.0000298)     | 0.0005377<br>(0.0010521)     |                              |                              |                           |                              |                              |                           |
| Prob > F                        | 0 ***                        | 0 ***                        | 0.1753                      | 0 ***                        | 0 ***                        | 0.0059 ***                   | 0 ***                        | 0 ***                        | 0.4828                    | 0 ***                        | 0 ***                        | 0.7953                    |
| R-squared                       | 0.4488                       | 0.4549                       | 0.1663                      | 0.35                         | 0.3549                       | 0.2528                       | 0.3447                       | 0.3572                       | 0.0537                    | 0.3226                       | 0.3415                       | 0.0413                    |
| Observations                    | 253                          | 201                          | 52                          | 224                          | 173                          | 51                           | 290                          | 228                          | 62                        | 277                          | 216                          | 61                        |

Table 3c. Openness and Growth: Change on change. The short run. 5 year averages (continued)

|                                 | World                     | Developing                | Developed                 | World                     | Developing                | Developed                 |
|---------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
|                                 | OLS                       | OLS                       | OLS                       | OLS                       | OLS                       | OLS                       |
|                                 | 13                        | 14                        | 15                        | 16                        | 17                        | 18                        |
|                                 | Last income<br>log/change | Last income<br>log/change | Last income<br>log/change | Last income<br>log/change | Last income<br>log/change | Last income<br>log/change |
| Previous income                 | 0.7875541                 | 0.8066231                 | 0.3148614                 | 0.5114069                 | 0.5107569                 | 0.5143403                 |
| Log/change                      | (0.1059839) ***           | (0.1085814) ***           | (0.1729074) *             | (0.1714619) ***           | (0.1748089) ***           | (0.1095030) ***           |
| Last Trade/GDP<br>change        |                           |                           |                           |                           |                           |                           |
| Previous<br>Trade/GDP<br>change |                           |                           |                           |                           |                           |                           |
| Last FDI/GDP<br>change          | -0.0000042<br>(0.0000494) | -0.0000044<br>(4.95E-05)  | -0.0003069<br>(0.0004135) |                           |                           |                           |
| Previous<br>FDI/GDP<br>change   |                           |                           |                           | 0.0000168<br>(0.0000342)  | 0.0000165<br>(3.40E-05)   | 0.0005201<br>(0.0011159)  |
| Prob > F                        | 0 ***                     | 0 ***                     | 0.0023 ***                | 0.0057 ***                | 0.0082 ***                | 0.0002 ***                |
| R-squared                       | 0.3461                    | 0.3501                    | 0.1503                    | 0.2393                    | 0.2379                    | 0.2731                    |
| Observations                    | 261                       | 206                       | 55                        | 230                       | 176                       | 54                        |

Table 3d. Openness and Growth: Change on change. The medium run. 10 year averages.

|                                 | World<br>OLS                 | Developing<br>OLS            | Developed<br>OLS             | World<br>OLS                 | Developing<br>OLS            | Developed<br>OLS             | World<br>OLS                 | Developing<br>OLS            | Developed<br>OLS             | World<br>OLS                 | Developing<br>OLS            | Developed<br>OLS             |
|---------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
|                                 | 1                            | 2                            | 3                            | 4                            | 5                            | 6                            | 7                            | 8                            | 9                            | 10                           | 11                           | 12                           |
|                                 | Income<br>80s->90s<br>change | Income<br>80s->90s<br>change | Income<br>80s->90s<br>change | Income<br>80s->90s<br>change | Income<br>80s->90s<br>change | Income<br>80s->90s<br>change | Income<br>80s->90s<br>change | Income<br>80s->90s<br>change | Income<br>80s->90s<br>change | Income<br>80s->90s<br>change | Income<br>80s->90s<br>change | Income<br>80s->90s<br>change |
| Income<br>70s->80s<br>change    | 0.6670146<br>(0.0910145) *** | 0.6686058<br>(0.1034929) *** | 0.5460356<br>(0.1111971) *** | 0.5300500<br>(0.0873414) *** | 0.5075175<br>(0.1043809) *** | 0.0092825<br>(0.0197160) *** | 0.6175220<br>(0.0979022) *** | 0.6880599<br>(0.0985755) *** | 0.2420284<br>(0.1824255)     | 0.5128351<br>(0.0846033) *** | 0.5423512<br>(0.0920891) *** | 0.3629074<br>(0.2074055) *   |
| Trade/GDP<br>80s->90s<br>change | 0.2323835<br>(0.0692735) *** | 0.2539443<br>(0.0744806) *** | 0.2006529<br>(0.2259167)     |                              |                              |                              | 0.1972737<br>(0.0692616) *** | 0.2378463<br>(0.0685881) *** | 0.2388270<br>(0.2304227)     |                              |                              |                              |
| Trade/GDP<br>70s->80s<br>change |                              |                              |                              | 0.1602835<br>(0.0905832) *   | 0.1503887<br>(0.0976249)     | 0.3637717<br>(0.2193777)     |                              |                              |                              | 0.2440181<br>(0.0835917) *** | 0.2346243<br>(0.0892328) *** | 0.2568188<br>(0.2363022)     |
| FDI/GDP<br>80s->90s<br>change   | 0.0000180<br>(0.0000233)     | 0.0000344<br>(2.77E-05)      | 0.0016322<br>(0.0084773)     |                              |                              |                              |                              |                              |                              |                              |                              |                              |
| FDI/GDP<br>70s->80s             |                              |                              |                              | -0.0000127<br>(-9.19E-06)    | 0.0092825<br>(0.0000092)     | 1.08E-05<br>(0.0197160)      |                              |                              |                              |                              |                              |                              |
| Prob > F                        | 0 ***                        | 0 ***                        | 0.0003 ***                   | 0 ***                        | 0 ***                        | 0 ***                        | 0 ***                        | 0 ***                        | 0.1318                       | 0 ***                        | 0 ***                        | 0.2131                       |
| R-squared                       | 0.464                        | 0.4629                       | 0.4927                       | 0.3853                       | 0.3591                       | 0.4893                       | 0.4259                       | 0.4812                       | 0.2196                       | 0.4414                       | 0.4621                       | 0.2951                       |
| Observations                    | 105                          | 79                           | 26                           | 100                          | 74                           | 25                           | 114                          | 85                           | 29                           | 116                          | 85                           | 31                           |

Table 3d.Openness and Growth: Change on change. The medium run. 10 year averages (continued)

|                       | World           | Developing      | Developed       | World           | Developing      | Developed       |
|-----------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                       | OLS             | OLS             | OLS             | OLS             | OLS             | OLS             |
|                       | 13              | 14              | 15              | 16              | 17              | 18              |
|                       | Income          | Income          | Income          | Income          | Income          | Income          |
|                       | 80s->90s        | 80s->90s        | 80s->90s        | 80s->90s        | 80s->90s        | 80s->90s        |
|                       | change          | change          | change          | change          | change          | change          |
| Income<br>70s->80s    | 0.6725275       | 0.6668630       | 0.6379305       | 0.6146937       | 0.5886934       | 0.6833236       |
| change                | (0.1043947) *** | (0.1238912) *** | (0.1066492) *** | (0.0914654) *** | (0.1089944) *** | (0.0978567) *** |
| Trade/GDP<br>80s->90s |                 |                 |                 |                 |                 |                 |
| change                |                 |                 |                 |                 |                 |                 |
| Trade/GDP<br>70s->80s |                 |                 |                 |                 |                 |                 |
| change                |                 |                 |                 |                 |                 |                 |
| FDI/GDP<br>80s->90s   | 0.0000128       | 0.0000207       | -0.0020097      |                 |                 |                 |
| change                | (0.0000312)     | (3.46E-05)      | (0.0092022)     |                 |                 |                 |
| FDI/GDP<br>70s->80s   |                 |                 |                 | -0.0000223      | -1.80E-05       | 0.0205026       |
| change                |                 |                 |                 | (0.0000101) **  | (1.07E-05) *    | (0.0164880)     |
| Prob > F              | 0 ***           | 0 ***           | 0 ***           | 0 ***           | 0 ***           | 0 ***           |
| R-squared             | 0.4229          | 0.3989          | 0.5349          | 0.3972          | 0.3561          | 0.5464          |
| Observations          | 111             | 83              | 28              | 105             | 78              | 27              |

Table 3e. Openness and Growth: Change on change. Instrumental Variables (IV). The short run. 5 year averages

|                                | World<br>IV<br>Income pc<br>Last<br>log/change | Developing<br>IV<br>Income pc<br>Last<br>log/change | Developed<br>IV<br>Income pc<br>Last<br>Log/change | World<br>IV<br>Income pc<br>Last<br>Log/change | Developing<br>IV<br>Income pc<br>Last<br>log/change | Developed<br>IV<br>Income pc<br>Last<br>log/change | World<br>IV<br>Income pc<br>Last<br>log/change | Developing<br>IV<br>Income pc Last<br>log/change | Developed<br>IV<br>Income pc<br>Last<br>log/change |
|--------------------------------|------------------------------------------------|-----------------------------------------------------|----------------------------------------------------|------------------------------------------------|-----------------------------------------------------|----------------------------------------------------|------------------------------------------------|--------------------------------------------------|----------------------------------------------------|
|                                | 1                                              | 2                                                   | 3                                                  | 4                                              | 5                                                   | 6                                                  | 7                                              | 8                                                | 9                                                  |
| Income pc Middle               | 1.258327                                       | 0.774143                                            | 1.262146                                           | 0.6153899                                      | 0.6514307                                           | -0.4956396                                         | 0.6152111                                      | 0.6515469                                        | -0.5351401                                         |
| Log/change                     | (3.133396)                                     | (2.501700)                                          | (2.021566)                                         | (0.0784575) ***                                | (0.0796499) ***                                     | (0.7395001)                                        | (0.0786318) ***                                | (0.0795672)                                      | (0.8117614)                                        |
| Initial income pc<br>Log/level |                                                |                                                     |                                                    | 0.6514307<br>(0.0010350)                       | -0.4956396<br>(0.0017653)                           | -0.0026607<br>(0.0030264)                          |                                                |                                                  |                                                    |
| Trade/GDP Last                 | 0.039038                                       | 0.0105118                                           | 0.0569715                                          | -0.0029751                                     | 0.0036279                                           | -0.1771797                                         | -0.0014149                                     | 0.0041155                                        | -0.2005174                                         |
| Change                         | (0.188292)                                     | (0.1255672)                                         | (0.3179929)                                        | (0.0206629)                                    | (0.0234247)                                         | (0.2268467)                                        | (0.0165667)                                    | (0.0180135)                                      | (0.2486277)                                        |
| Prob > F                       | 0.2659                                         | 0.4139                                              | 0.2863                                             | 0                                              | 0                                                   | 0.7983                                             | 0                                              | 0                                                | 0.8575                                             |
| R-squared                      | .                                              | 0.3571                                              | .                                                  | 0.3026                                         | 0.3508                                              | .                                                  | 0.3106                                         | 0.3524                                           | .                                                  |
| Observations                   | 270                                            | 211                                                 | 59                                                 | 270                                            | 211                                                 | 59                                                 | 270                                            | 211                                              | 59                                                 |

Note: As in Table 3a.

Table 3f. Openness and Growth: Change on change. Instrumental Variables. The medium run. 10 year averages.

|                                 | World                          | Developing                     | Developed                      | World                          | Developing                     | Developed                      | World                          | Developing                     | Developed                      | World                          | Developing                     | Developed                      |
|---------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
|                                 | IV                             | IV                             | IV                             | IV                             | IV                             | IV                             | IV                             | IV                             | IV                             | IV                             | IV                             | IV                             |
|                                 | 1                              | 2                              | 3                              | 4                              | 5                              | 6                              | 7                              | 8                              | 9                              | 10                             | 11                             | 12                             |
|                                 | p.c. GDP<br>80s->90s<br>change | p.c. GDP<br>80s->90s<br>change | p.c. GDP<br>80s->90s<br>change | p.c. GDP<br>80s->90s<br>change | p.c. GDP<br>80s->90s<br>change | p.c. GDP<br>80s->90s<br>change | p.c. GDP<br>80s->90s<br>change | p.c. GDP<br>80s->90s<br>change | p.c. GDP<br>80s->90s<br>change | p.c. GDP<br>80s->90s<br>change | p.c. GDP<br>80s->90s<br>change | p.c. GDP<br>80s->90s<br>change |
|                                 |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |
| p.c. GDP<br>70s->80s<br>change  | Not instrumented               |                                |                                | Not instrumented               |                                |                                | Not instrumented               |                                |                                | Not instrumented               |                                |                                |
|                                 | 0.2152018                      | -0.9886545                     | 0.9324453                      | 0.2801262                      | -0.1093959                     | 1.665474                       | 0.5483487                      | 0.6392346                      | 0.2009607                      | 0.5466077                      | 0.5764627                      | 0.0980006                      |
|                                 | (0.7211055)                    | (2.0234630)                    | (0.7082305)                    | (0.4701884)                    | (0.8664760)                    | (2.117927)                     | (0.1602661) ***                | (0.1444562) ***                | (0.2491908)                    | (0.1729157) ***                | (0.2575688) **                 | (0.2415226)                    |
| Trade/GDP<br>(70s)<br>level     |                                |                                |                                |                                |                                |                                |                                |                                |                                | Not instrumented               |                                |                                |
|                                 |                                |                                |                                |                                |                                |                                |                                |                                |                                | -0.0004491                     | -0.0027264                     | 0.0018472                      |
|                                 |                                |                                |                                |                                |                                |                                |                                |                                |                                | (0.0008799)                    | (0.0034756)                    | (0.0006056) ***                |
| Trade/GDP<br>80s->90s<br>change | Instrumented                   |                                |                                | Instrumented                   |                                |                                | Instrumented                   |                                |                                | Instrumented                   |                                |                                |
|                                 | -0.3047121                     | -0.9332471                     | 1.2289220                      | -0.5593638                     | -0.4266058                     | -4.073619                      | -0.3982608                     | -0.0970666                     | 0.5657703                      | -0.5453760                     | -1.008602                      | 0.4574036                      |
|                                 | (0.4346640)                    | (1.5327310)                    | (0.8306494)                    | (0.3802305)                    | (0.6524429)                    | (9.243613)                     | (0.3731032)                    | (0.3076662)                    | (1.8351570)                    | (0.4141617)                    | (1.2500300)                    | (1.6461670)                    |
|                                 |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |
| FDI/GDP<br>80s->90s<br>change   | Not Instrumented               |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |                                |
|                                 | 0.0007380                      | 0.0005922                      | -0.0023521                     |                                |                                |                                |                                |                                |                                |                                |                                |                                |
|                                 | (0.0029406)                    | (0.0033884)                    | (0.0102951)                    |                                |                                |                                |                                |                                |                                |                                |                                |                                |
| Prob > F                        | 0.456                          | 0.944                          | 0.342                          | 0.1264                         | 0.7097                         | 0.6475                         | 0 ***                          | 0 ***                          | 0.2831                         | 0 ***                          | 0.0272 **                      | 0.0004 ***                     |
| R-squared                       | .                              | .                              | .                              | .                              | .                              | .                              | 0.0262                         | 0.3486                         | 0.1515                         | .                              | .                              | 0.4394                         |
| Observations                    | 102                            | 76                             | 26                             | 111                            | 82                             | 29                             | 111                            | 82                             | 29                             | 111                            | 82                             | 29                             |

**Table 4a. Fixed effects regressions. Dependent variable: Log of Consumer Price Index**

|              | World               | Developing          | Developed         | World               | Developing          | Developed            | World                | Developing           | Developed            |
|--------------|---------------------|---------------------|-------------------|---------------------|---------------------|----------------------|----------------------|----------------------|----------------------|
|              | 1                   | 2                   | 3                 | 4                   | 5                   | 6                    | 7                    | 8                    | 9                    |
| Current year |                     |                     |                   |                     |                     |                      |                      |                      |                      |
| X Trade      | 2.140***<br>(0.600) | 1.697***<br>(0.690) | -0.232<br>(0.149) |                     |                     |                      |                      |                      |                      |
| X FDI        |                     |                     |                   | 1.317***<br>(0.194) | 1.233***<br>(0.302) | -0.077***<br>(0.031) |                      |                      |                      |
| X RGDP       |                     |                     |                   |                     |                     |                      | -3.044***<br>(0.215) | -3.043***<br>(0.275) | -0.221***<br>(0.034) |
| Observations | 1504                | 1143                | 361               | 1346                | 1028                | 318                  | 1378                 | 1049                 | 329                  |
| R-squared    | 0.233               | 0.285               | 0.748             | 0.253               | 0.302               | 0.797                | 0.335                | 0.364                | 0.764                |

**Table 4a (continued)**

|              | World                | Developing           | Developed            | World                | Developing           | Developed            | World                | Developing           | Developed            |
|--------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|              | 10                   | 11                   | 12                   | 13                   | 14                   | 15                   | 16                   | 17                   | 18                   |
| X Trade      | 1.790***<br>(0.610)  | 1.659**<br>(0.711)   | -0.344**<br>(0.155)  |                      |                      |                      | 1.791**<br>(0.781)   | 1.447*<br>(0.860)    | -0.163<br>(0.141)    |
| X FDI        |                      |                      |                      | 0.856***<br>(0.203)  | 0.764***<br>(0.242)  | -0.076**<br>(0.033)  | 0.820***<br>(0.219)  | 0.712***<br>(0.246)  | -0.069**<br>(0.033)  |
| X RGDP       | -2.930***<br>(0.220) | -2.952***<br>(0.283) | -0.229***<br>(0.034) | -2.738***<br>(0.237) | -2.744***<br>(0.301) | -0.199***<br>(0.030) | -2.722***<br>(0.251) | -2.754***<br>(0.302) | -0.204***<br>(0.031) |
| Observations | 1355                 | 1026                 | 329                  | 1203                 | 915                  | 288                  | 1117                 | 906                  | 288                  |
| R-squared    | 0.324                | 0.352                | 0.768                | 0.320                | 0.360                | 0.820                | 0.320                | 0.360                | 0.324                |

Standard errors in parentheses

\* significant at less than 10%; \*\* less than 5% \*\*\* less than 1%

Selected definitions:

X Trade : Trade/GDP ratio transformed for normalization

X FDI : FDI/GDP ratio transformed for normalization

X RGDP : Real GDP per capita transformed for normalization

**Table 4b. Fixed effects regressions. Dependent variable: Log of Consumer Price Index**

| Yr + 1       | World               | Developing          | Developed         | World               | Developing          | Developed           | World                 | Developing            | Developed            |
|--------------|---------------------|---------------------|-------------------|---------------------|---------------------|---------------------|-----------------------|-----------------------|----------------------|
|              | 1                   | 2                   | 3                 | 4                   | 5                   | 6                   | 7                     | 8                     | 9                    |
| X Trade      | 2.621***<br>(0.630) | 2.115***<br>(0.729) | -0.216<br>(0.154) |                     |                     |                     |                       |                       |                      |
| X FDI        |                     |                     |                   | 0.952***<br>(0.195) | 0.808***<br>(0.287) | -0.078**<br>(0.030) |                       |                       |                      |
| X RGDP       |                     |                     |                   |                     |                     |                     | -83.435***<br>(5.334) | -80.472***<br>(6.378) | -5.394***<br>(1.068) |
| Observations | 1331                | 1080                | 339               | 1257                | 960                 | 297                 | 1399                  | 1069                  | 330                  |
| R-squared    | 0.227               | 0.282               | 0.765             | 0.238               | 0.287               | 0.817               | 0.355                 | 0.386                 | 0.775                |

**Table 4b (continued)**

| Yr + 1       | World                 | Developing             | Developed            | World                | Developing            | Developed            | World                 | Developing            | Developed            |
|--------------|-----------------------|------------------------|----------------------|----------------------|-----------------------|----------------------|-----------------------|-----------------------|----------------------|
|              | 10                    | 11                     | 12                   | 13                   | 14                    | 15                   | 16                    | 17                    | 18                   |
| X Trade      | 2.125***<br>(0.610)   | 1.873*<br>(0.707)      | -0.270*<br>(0.152)   |                      |                       |                      | 2.715***<br>(0.773)   | 2.102**<br>(0.847)    | -0.124<br>(0.137)    |
| X FDI        |                       |                        |                      | 0.700***<br>(0.190)  | 0.591***<br>(0.225)   | -0.081***<br>(0.030) | 0.652***<br>(0.203)   | 0.525**<br>(0.227)    | -0.077**<br>(0.030)  |
| X RGDP       | -80.325***<br>(5.508) | -78.0192***<br>(6.635) | -5.562***<br>(1.068) | -74.32***<br>(6.042) | -72.457***<br>(7.205) | -5.043***<br>(0.940) | -74.486***<br>(6.389) | -72.110***<br>(7.211) | -5.147***<br>(0.947) |
| Observations | 1375                  | 1045                   | 330                  | 1215                 | 927                   | 288                  | 1127                  | 918                   | 288                  |
| R-squared    | 0.343                 | 0.373                  | 0.777                | 0.330                | 0.370                 | 0.830                | 0.330                 | 0.370                 | 0.830                |

Standard errors in parentheses

\* significant at less than 10%; \*\* less than 5% \*\*\* less than 1%

Selected definitions: X Trade : Trade/GDP ratio transformed for normalization  
X FDI : FDI/GDP ratio transformed for normalization  
X RGDP : Real GDP per capita transformed for normalization

**Table 4c. Fixed effects regressions. Dependent variable: Log of Consumer Price Index**

| Yr + 2       | World               | Developing         | Developed         | World               | Developing         | Developed            | World                 | Developing            | Developed            |
|--------------|---------------------|--------------------|-------------------|---------------------|--------------------|----------------------|-----------------------|-----------------------|----------------------|
|              | 1                   | 2                  | 3                 | 4                   | 5                  | 6                    | 7                     | 8                     | 9                    |
| X Trade      | 3.062***<br>(0.809) | 2.346**<br>(0.926) | -0.137<br>(0.188) |                     |                    |                      |                       |                       |                      |
| X FDI        |                     |                    |                   | 0.629***<br>(0.193) | 0.471**<br>(0.227) | -0.0671**<br>(0.027) |                       |                       |                      |
| X RGDP       |                     |                    |                   |                     |                    |                      | -83.458***<br>(5.371) | -80.235***<br>(6.399) | -3.305***<br>(1.037) |
| Observations | 1331                | 1014               | 317               | 1170                | 894                | 276                  | 1329                  | 1017                  | 312                  |
| R-squared    | 0.227               | 0.275              | 0.787             | 0.229               | 0.280              | 0.835                | 0.358                 | 0.389                 | 0.789                |

**Table 4c (continued)**

| Yr + 2       | World                 | Developing            | Developed            | World                 | Developing            | Developed            | World                 | Developing            | Developed            |
|--------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|----------------------|
|              | 10                    | 11                    | 12                   | 13                    | 14                    | 15                   | 16                    | 17                    | 18                   |
| X Trade      | 2.524***<br>(0.773)   | 2.1313**<br>(0.894)   | -0.153<br>(0.190)    |                       |                       |                      | 3.602***<br>(1.013)   | 2.728**<br>(1.086)    | -0.056<br>(0.174)    |
| X FDI        |                       |                       |                      | 0.375**<br>(0.186)    | 0.254<br>(0.219)      | -0.065**<br>(0.027)  | 0.326<br>(0.199)      | 0.189<br>(0.221)      | -0.064**<br>(0.028)  |
| X RGDP       | -79.929***<br>(5.621) | -77.538***<br>(6.759) | -3.369***<br>(1.041) | -77.883***<br>(6.287) | -76.192***<br>(7.464) | -3.375***<br>(0.941) | -76.941***<br>(6.697) | -74.527***<br>(7.456) | -3.408***<br>(0.948) |
| Observations | 1300                  | 988                   | 312                  | 1139                  | 869                   | 270                  | 1052                  | 860                   | 270                  |
| R-squared    | 0.341                 | 0.370                 | 0.789                | 0.33                  | 0.37                  | 0.83                 | 0.33                  | 0.37                  | 0.84                 |

Standard errors in parentheses

\* significant at less than 10%; \*\* less than 5%; \*\*\* less than 1%

Selected definitions: X Trade : Trade/GDP ratio transformed for normalization  
X FDI : FDI/GDP ratio transformed for normalization  
X RGDP : Real GDP per capita transformed for normalization

**Table 4d. Fixed effects regressions. Dependent variable: Log of Consumer Price Index**

| Yr + 3       | World               | Developing        | Developed         | World              | Developing       | Developed           | World                 | Developing            | Developed         |
|--------------|---------------------|-------------------|-------------------|--------------------|------------------|---------------------|-----------------------|-----------------------|-------------------|
|              | 1                   | 2                 | 3                 | 4                  | 5                | 6                   | 7                     | 8                     | 9                 |
| X Trade      | 2.247***<br>(0.965) | 1.325<br>(1.1036) | 0.0357<br>(0.213) |                    |                  |                     |                       |                       |                   |
| X FDI        |                     |                   |                   | 0.382**<br>(0.185) | 0.227<br>(0.219) | -0.053**<br>(0.023) |                       |                       |                   |
| X RGDP       |                     |                   |                   |                    |                  |                     | -71.463***<br>(5.046) | -67.991***<br>(5.999) | -1.262<br>(0.913) |
| Observations | 1239                | 944               | 295               | 1078               | 823              | 255                 | 1250                  | 958                   | 292               |
| R-squared    | 0.215               | 0.263             | 0.806             | 0.218              | 0.269            | 0.849               | 0.343                 | 0.374                 | 0.804             |

**Table 4d (continued)**

| Yr + 3       | World                 | Developing            | Developed         | World                 | Developing            | Developed           | World                 | Developing            | Developed           |
|--------------|-----------------------|-----------------------|-------------------|-----------------------|-----------------------|---------------------|-----------------------|-----------------------|---------------------|
|              | 10                    | 11                    | 12                | 13                    | 14                    | 15                  | 16                    | 17                    | 18                  |
| X Trade      | 1.499<br>(0.924)      | 0.928<br>(1.066)      | 0.066<br>(0.216)  |                       |                       |                     | 2.452**<br>(1.239)    | 1.449<br>(1.324)      | 0.097<br>(0.2)      |
| X FDI        |                       |                       |                   | 0.142<br>(0.178)      | 0.022<br>(0.21)       | -0.051**<br>(0.024) | 0.143<br>(0.191)      | 0.016<br>(0.212)      | -0.053**<br>(0.024) |
| X RGDP       | -68.500***<br>(5.297) | -65.789***<br>(6.356) | -1.250<br>(0.915) | -71.408***<br>(6.039) | -69.905***<br>(7.152) | -1.718**<br>(0.842) | -69.687***<br>(6.463) | -67.343***<br>(7.145) | -1.679**<br>(0.847) |
| Observations | 1216                  | 924                   | 292               | 1054                  | 803                   | 251                 | 973                   | 794                   | 251                 |
| R-squared    | 0.321                 | 0.351                 | 0.804             | 0.32                  | 0.36                  | 0.848               | 0.31                  | 0.35                  | 0.85                |

Standard errors in parentheses

\* significant at less than 10%; \*\* less than 5% \*\*\* less than 1%

Selected definitions: X Trade : Trade/GDP ratio transformed for normalization  
X FDI : FDI/GDP ratio transformed for normalization  
X RGDP : Real GDP per capita transformed for normalization

**Table 4e. Fixed effects regressions. Dependent variable: Log of Consumer Price Index**

| Yr + 4       | World            | Developing       | Developed        | World            | Developing        | Developed             | World                 | Developing            | Developed        |
|--------------|------------------|------------------|------------------|------------------|-------------------|-----------------------|-----------------------|-----------------------|------------------|
|              | 1                | 2                | 3                | 4                | 5                 | 6                     | 7                     | 8                     | 9                |
| X Trade      | 1.790<br>(1.105) | 0.770<br>(1.262) | 0.209<br>(0.240) |                  |                   |                       |                       |                       |                  |
| X FDI        |                  |                  |                  | 0.161<br>(0.184) | 0.0020<br>(0.218) | -0.0881***<br>(0.021) |                       |                       |                  |
| X RGDP       |                  |                  |                  |                  |                   |                       | -62.622***<br>(5.196) | -58.350***<br>(6.195) | 0.201<br>(0.861) |
| Observations | 1145             | 872              | 273              | 984              | 749               | 235                   | 1164                  | 893                   | 271              |
| R-squared    | 0.209            | 0.258            | 0.814            | 0.211            | 0.263             | 0.866                 | 0.319                 | 0.351                 | 0.811            |

**Table 4e (continued)**

| Yr + 4       | World                 | Developing            | Developed        | World                 | Developing            | Developed            | World                | Developing            | Developed            |
|--------------|-----------------------|-----------------------|------------------|-----------------------|-----------------------|----------------------|----------------------|-----------------------|----------------------|
|              | 10                    | 11                    | 12               | 13                    | 14                    | 15                   | 16                   | 17                    | 18                   |
| X Trade      | 1.160<br>(1.0708)     | 0.468<br>(1.235)      | 0.249<br>(0.243) |                       |                       |                      | 1.292<br>(1.475)     | 0.182<br>(1.574)      | 0.132<br>(0.218)     |
| X FDI        |                       |                       |                  | 0.011<br>(0.177)      | -0.115<br>(0.211)     | -0.086***<br>(0.021) | 0.014<br>(0.193)     | -0.088<br>(0.216)     | -0.088***<br>(0.021) |
| X RGDP       | -59.663***<br>(5.423) | -56.089***<br>(6.531) | 0.185<br>(0.861) | -65.677***<br>(6.205) | -63.483***<br>(7.376) | -1.050<br>(0.776)    | -65.008***<br>(6.73) | -62.516***<br>(7.438) | -1.016<br>(0.779)    |
| Observations | 1126                  | 855                   | 271              | 964                   | 732                   | 232                  | 891                  | 725                   | 232                  |
| R-squared    | 0.296                 | 0.327                 | 0.812            | 0.310                 | 0.340                 | 0.865                | 0.290                | 0.330                 | 0.870                |

Standard errors in parentheses

\* significant at less than 10%; \*\* less than 5% \*\*\* less than 1%

Selected definitions: X Trade : Trade/GDP ratio transformed for normalization  
X FDI : FDI/GDP ratio transformed for normalization  
X RGDP : Real GDP per capita transformed for normalization

**Table 4f. Fixed effects regressions. Dependent variable: Log of Consumer Price Index**

| Yr + 5       | World                 | Developing            | Developed        | World            | Developing        | Developed            | World                 | Developing            | Developed        |
|--------------|-----------------------|-----------------------|------------------|------------------|-------------------|----------------------|-----------------------|-----------------------|------------------|
|              | 1                     | 2                     | 3                | 4                | 5                 | 6                    | 7                     | 8                     | 9                |
| X Trade      | -51.164***<br>(1.381) | -45.973***<br>(1.577) | 0.592<br>(0.288) |                  |                   |                      |                       |                       |                  |
| X FDI        |                       |                       |                  | 0.022<br>(0.182) | -0.096<br>(0.214) | -0.066***<br>(0.022) |                       |                       |                  |
| X RGDP       |                       |                       |                  |                  |                   |                      | -51.164***<br>(5.293) | -45.973***<br>(6.354) | 0.592<br>(0.794) |
| Observations | 1048                  | 797                   | 251              | 891              | 677               | 214                  | 1075                  | 825                   | 250              |
| R-squared    | 0.206                 | 0.255                 | 0.816            | 0.209            | 0.260             | 0.850                | 0.292                 | 0.326                 | 0.811            |

**Table 4f (continued)**

| Yr + 5       | World                 | Developing            | Developed          | World                 | Developing            | Developed            | World                 | Developing            | Developed            |
|--------------|-----------------------|-----------------------|--------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|----------------------|
|              | 10                    | 11                    | 12                 | 13                    | 14                    | 15                   | 16                    | 17                    | 18                   |
| X Trade      | 1.728<br>(1.353)      | 0.844<br>(1.562)      | 0.707**<br>(0.292) |                       |                       |                      | 1.581<br>(1.886)      | 0.21<br>(2.017)       | 0.186<br>(0.289)     |
| X FDI        |                       |                       |                    | -0.073<br>(0.176)     | -0.171<br>(0.209)     | -0.066***<br>(0.022) | -0.114<br>(0.193)     | -0.15<br>(0.216)      | -0.068***<br>(0.022) |
| X RGDP       | -50.171***<br>(5.510) | -45.698***<br>(6.698) | 0.337<br>(0.793)   | -54.057***<br>(6.178) | -50.918***<br>(7.392) | -1.497*<br>(0.775)   | -52.219***<br>(6.678) | -49.774***<br>(7.446) | -1.481*<br>(0.776)   |
| Observations | 1033                  | 783                   | 250                | 875                   | 663                   | 212                  | 810                   | 657                   | 212                  |
| R-squared    | 0.274                 | 0.305                 | 0.816              | 0.280                 | 0.32                  | 0.850                | 0.270                 | 0.310                 | 0.850                |

Standard errors in parentheses

\* significant at less than 10%; \*\* less than 5%; \*\*\* less than 1%

Selected definitions: X Trade : Trade/GDP ratio transformed for normalization  
X FDI : FDI/GDP ratio transformed for normalization  
X RGDP : Real GDP per capita transformed for normalization