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**Is the Minimum Wage an Effective Tool  
to Promote Decent Work  
and Reduce Poverty?  
The Experience of Selected Developing Countries**

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## Preface

This paper presents a survey of the effects of minimum wage legislation on the level of employment and poverty in selected developing countries. Following the introduction, the second section provides a literature survey of the relationship between the level of minimum wage and employment and between the level of minimum wage and poverty. The third section consists of an overview of low wage labour markets and presents trends in employment, average wages and minimum wages. Such markets show evidence of a high instability of the minimum wage in many developing countries, both in real terms and with respect to the average wage. The fourth section is empirical and tests the response of employment and poverty to changes in the minimum wage using time series data on more than 20 countries.

The data analysis gives strong support to the proposition that the minimum wage may bring positive results in poverty alleviation by improving the living conditions of workers and their families while having no negative results on employment. There is no evidence of the effect of the size of the minimum relative to the average wage on the size of the informal economy in Latin America.

The paper concludes with some specific economic and social policy recommendations following from the analysis.

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## 1. Introduction

Increased under-employment in developing countries in the 1980s-1990s has led to a renewed emphasis on labour market rigidities such as minimum wage laws. The renewed focus on labour market regulations resulted from the apparent failure of Keynesian-inspired policies to solve the problem of unemployment. In order to remain competitive in the world market, governments of increasingly open economies took steps to deregulate their labour market in many parts of the developing world. Because of the need to generate foreign exchange for debt servicing, there was pressure to boost the development of the export sector and to decrease labour costs. The necessity of debt servicing also limited public expenditure, including public sector wages as part of the structural adjustment process. While advocates of these reforms drew attention to their benefits in terms of job creation, others feared the adverse effects of deregulation on the development of poverty, both in absolute and relative terms. As a matter of fact, a recent increase in inequality in developing countries is reported by several studies (Cornia, 1999; van der Hoeven, 2000). To the extent that the slow growth of earnings in the bottom distribution is one cause of the widening dispersion of earnings in these countries, the minimum wage could help to restore the relative situation of some of the lowest-paid workers. The aim of this paper is to explore the effects of changes in the minimum wages on employment and poverty in developing countries. This study, we hope, will help policy makers find more appropriate tools to “integrate the agenda of poverty reduction and decent work”.<sup>1</sup> Supporters of minimum wage laws argue that the setting of minimum wages improves the economic conditions of low-wage workers. However, if increasing the minimum wage reduces the employment of this group of workers, then the overall effect on the income distribution is ambiguous. It is all the more important, therefore to assess the relevance of the minimum wage as a wage policy tool after the liberalization of the labour market that occurred in the 1980s-1990s. On the one hand, minimum wages seem to be received by a greater share of the working population, partly because the low level of the minimum wage in some countries provided more incentives to comply with the law (Lustig and McLeod, 1997). On the other hand, a high share of new jobs in the developing world are nowadays created in the informal sector where the minimum wage is weakly, if at all, enforced. In Latin America, for example, 85 per cent of newly created jobs are in the informal sector (ILO, 1997). In Africa, the percentage of the labour force working in the formal sector has declined between 1990 and 1999 (van der Hoeven & van der Geest, 1999). What are the consequences of this trend? The second question to answer deals with the effect of the minimum wage on the level of employment. What is the sign of the relationship, if any? What are the competing theories to explain the link between the minimum wage and employment? Have they received any empirical support in developing countries? Finally, our last question is the most ambitious. Ultimately, what is the effect of a change in the minimum wage on poverty? Does a higher minimum wage push workers into or out of poverty? Who are the workers most at risk? Is it possible to test the minimum wage effect in a dual sector economy with a sizeable informal sector?

The lack of data makes such an analysis difficult. One of the most severe limitations in studying minimum wages is the unavailability of time series data for many developing countries, especially those in Africa. Moreover, many countries also lack information on basic variables like the share of workers receiving minimum wages, the degree of compliance with minimum wage laws, the distribution of the minimum wage by gender or among certain groups of the population like youth, the urban population, etc. However, we have access to a recently released database containing information on the minimum wage at several points in time (from the 1970s to the late 1990s) for approximately 30 developing countries mainly

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<sup>1</sup> DG speech at the World Bank, Washington D.C., 2 March 2000.

belonging to the South American and the African continent. Thailand and the Philippines are also represented in the sample. The data set enables us to test simple equations that relate the changes in minimum wages to variations in employment and poverty.

This paper is organized as follows. Section 2 reviews the recent developments in the literature on the minimum wage and summarizes the main results of the studies. Section 3 provides an overview of low-wage labour market conditions by presenting trends in minimum wage levels, country evidence on compliance and the characteristics of minimum wage earners. Section 4 investigates the response of employment and poverty levels to changes in minimum wages using our data set. The conclusion summarizes the main findings and presents some policy recommendations.

## **2. The effect of minimum wage on employment and poverty: A review of the literature**

### **Minimum wage and employment**

#### ***Predictions***

##### *Predictions of neo-classical models when there is an informal sector*

In the standard model, employment will fall if the wage is exogenously raised. The higher the minimum wage, the more unemployment there will be. In developing countries, minimum wage law generally applies to a small formal sector.<sup>2</sup> Often, the minimum wage law does not cover all workers of the formal sector though (for example, part-time workers, workers in some industries may be excluded) while in a few cases, there is also a limit lower floor imposed on wages paid to informal workers. The terms informal and uncovered are therefore not exactly equivalent. In what follows however, we are concerned with substitution effects and with changes in relative wages in two parts of the economy: one with and another without a minimum wage. In the long run, substitution of capital to labour and changes in relative wages probably occur in both the uncovered and the informal sectors as a result of changes in the minimum wage, though probably more immediately in the informal sector. Informal and uncovered are thus used as substitutes. In the presence of an extended informal sector, the effect of minimum wage is twofold. Firstly, the introduction of a minimum wage results in a decrease of employment in the covered sector since labour demand in the neo-classical model is a decreasing function of wage. Secondly, workers who lose their jobs in the covered sector will work in the uncovered sector, thereby depressing wages in this part of the economy. As some of these workers have reservation wages above the wage equilibrium that prevails in the uncovered sector, total employment is less than employment in the absence of a minimum wage. Therefore, the final effect on employment very much depends on the size of the minimum wage increase and also on substitution effects between formal and informal employment.

Formalizing the effects of the minimum wage when there is an uncovered sector, Fields (1994) showed that the effect of the minimum wage on unemployment depends in fact on three factors: the elasticity of demand for labour in the covered sector, the elasticity of wage in the non-covered sector and the size of the minimum wage rise. These factors ensure that the overall effect is ambiguous. As he noted: "Other things being equal, a higher minimum wage may result either in more unemployment in equilibrium or in less unemployment in equilibrium, depending on parameter values".

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<sup>2</sup> Following the standard practice, the informal sector, which is often defined as a residual, excludes the agricultural and the public sector and includes all non-professional workers in establishments with less than 6 or 11 persons.

### *Introducing efficiency wage*

The model developed by Agénor & Aizenman (1999) departs from neoclassical theory in assuming that skilled workers are paid an efficiency wage. These authors argue that a reduction in the minimum wage increases the demand for unskilled workers in the formal sector and contributes to a decrease in labour supply in the informal sector, thus leading to an increase in the informal sector wage. Thus as the wage paid to workers in the informal sector rises, the wage paid to skilled workers is rated up. In turn, the wage increase for skilled workers reduces their employment.

Efficiency wage theory is also able to account for the spike in the wage distribution – the concentration of wages at the minimum - that occurs to the minimum wage also in firms who are exempted from the wage floor, for example in the USA (Card & Krueger, 1995, p. 158). A similar phenomena was observed in Papua New Guinea after the 1992 drop in the minimum wage: new entrants in big firms were paid wages higher than the lower minimum wage that was supposed to apply to them (Levantis, 1997). One explanation of this fact is that workers perceive the old minimum wage as the fair wage.

### *Introducing firms' reaction to the minimum wage*

The study by Fraja (1999) is built on the idea that firms respond to an increase in the real minimum wage by making working conditions harder. In this model, jobs with harder working conditions are better paid and workers have different preferences over working conditions. In the absence of minimum wage regulations, the firm would not require a worker who prefers lighter working conditions to work harder, because it would have to compensate her for that. With the introduction of a minimum wage, the firm requires higher effort from these workers. This model is able to account for the evidence that, for a moderate increase in the minimum wage, the overall effect on employment seems negligible.

It is also possible that firms offset the effect of the minimum wage by reducing non-wage compensation. For instance, employers may react to the rise in the minimum wage by increasing investment in fixed and human capital, with the effect of increasing aggregate employment (Fraja, 1996). The very fact that firms may respond to an increase in the minimum wage other than by dismissing employees is important. It means that the implication of workers' and employers' organizations in the determination of the minimum wage may greatly contribute to the success of any minimum wage policy. According to Islam & Nazara (2000), consultations with unions and business organisations in Indonesia contributed to making minimum wage increases harmless to employment over 1990 and 1998. Controlling for the level of GDP and location, the authors found no evidence of a negative relationship between the ratio of the minimum to the average wage and wage employment in this country.

It has finally been argued that a rise in the minimum wage may not lead to a decrease in employment because demand shocks may offset the disemployment effect of the minimum wage.

### *Removing the hypothesis of free competition*

In the monopsony theory, firms are price-takers in the product market, but have some degree of market power in the labour market. This market description corresponds to the situation of agriculture in Morocco where the low mobility of labour ensures that, in a given area, the few large farmers deal with a given number of employees. In Morocco, there is a minimum wage specific to agriculture, which is much below the minimum wage in other sectors and seems more or less enforced (Azam, 1992). When firms are confronted with an increase in the minimum wage above the ongoing wage (which is less than the worker's marginal productivity in the case of a monopsony), monopsony theory predicts that the best strategy is to increase the level of employment. Indeed, Azam (1992) found a positive

relationship between the minimum wage and employment in the case of wheat production in Morocco during 1971-1989. Controlling for the market price of wheat and other cereals, an increase in the real minimum wage in agriculture is found to increase wheat production and therefore the demand for labour. Thus the minimum wage increases employment and as the agricultural labourers are amongst the poorest workers, it contributes to alleviate poverty.

*Introducing efficiency wage in the monopsony case*

In another paper, (Azam, 1997) suggested an alternative explanation of his findings on Morocco. His explanation assumes that the setting of a minimum wage relieves the employer from the burden of finding out the respective wage for each employee that would minimize labour costs while ensuring that the household can survive on it. The author concludes: "In this model, the minimum wage works in the common interest of the employers, by preventing some kind of opportunistic behaviour. Hence, each of them has an incentive to monitor compliance by the others". In turn, this incentive explains why the agricultural wage is enforced in Morocco. In this country, there seems to be a collective interest for enforcing the minimum wage.

*Introducing household's labour supply*

A rise in the minimum wage may also decrease the labour supply of other members of the household affected by the rise and thus contribute to the reduction of unemployment (Basu, Genicot & Stiglitz, 1999).

*Including job search friction/reservation wage*

In a model where workers and jobs are heterogeneous, time is needed to ensure that each worker's type matches its own job type. The effect of setting a minimum wage in this context is to increase the reservation wage and therefore the quality of the match between jobs and workers' profile (Teulings, 2000).

***Empirical evidence***

As an answer to the ambivalence of the theoretic predictions, a large number of studies using empirical data have been developed.

There are three main procedures of estimating the effect of the minimum wage on employment. The first and most simple is to regress employment changes on the minimum wage, controlling for other factors. Empirically, the employment effect is estimated using:

$$E_t = a_1 f(MW_t) + a_2 X_t + u_t \quad (1)$$

where  $E_t$  is the annual change in the log of employment,  $MW_t$  represents the change in real minimum wage in percentage between  $t$  and  $t-1$ , and  $X_t$  is a vector of independent variables at time  $t$  that are supposed to affect the level of employment at time  $t$ . Typically, estimations relate changes in employment over time to variation in the level of the minimum wage (often relative to the average wage), output growth, controls for changes in labour supply (like for example the ratio of active to total population), educational attainment and a time trend. To account for the effect of the minimum wage in the uncovered sector, often the coverage-weighted sum of the ratio of the minimum wage to average wage is used as an independent variable in place of the minimum wage.

Bell (1997) estimated the impact on employment of the erosion of the minimum wage in Mexico and its increase in Colombia in the 1980s. She estimated the following relationship for both countries:

$$\ln(\text{emp/pop})_t = \beta_1 \ln(\text{MW/AW})_t + \beta_2 \ln(\text{GNP}) + \beta_3 \ln(\text{price})_t + \beta_4 \text{trend} + \epsilon_t \quad (2)$$

where employment refers to manufacturing employment.

She found significant minimum wage effects in Colombia but not in Mexico. In Colombia, an increase of 15 per cent in the real minimum wage is found to have reduced employment by 5 per cent during 1977-87. In Mexico, the very low value of the minimum wage may very well explain the finding that no disemployment is observed for this country. The value of the real minimum wage was eroded in Mexico in the 1980s and lost 45 per cent, while it increased by roughly the same proportion in Colombia in 1988.

Another study on Mexico focuses on the impact of the minimum wage on overall employment while the previous analysis is restricted to the manufacturing sector (Feliciano, 1998). A strong gender differential is identified: reductions in the Mexican minimum wage between 1970 and 1990 were found to have increased the employment of women aged 15-64 and to have reduced the employment of older male workers.

Similarly for industrialized countries, the negative effect of the minimum wage on youth employment in developing countries is feared but for lack of disaggregated data, there is little evidence on that matter (Ghellab, 1998). In France a cross-section study investigated the responsibility of the minimum wage in making the youth unemployment rate as high as 20 per cent since 1983. Empirically, the study regressed the yearly unemployment rate of youth over the log of minimum wages, unemployment rate of prime-age adults (25-49) as a control of business cycle variation, the log of the number of subsidized jobs for youth over the number of youth unemployed and the schooling rate during the period 1970-1994 (Bruno & Cazes, 1997). No impact of minimum wage on the unemployment of youth could be identified.

The method of regressing the minimum wage at time  $t$  (or  $t-1$ ) has two caveats: firstly, it requires changes in demand and supply factors to be controlled. Most notably, controls for final product demand in low-wage industries are also lacking. Secondly, the minimum wage is possibly endogenous, as minimum wage and output may well be determined by the same factors.

The second procedure of estimating the minimum wage effect on employment, the so-called "natural experiment approach", was introduced by Card & Krueger (1995). The authors analysed the New Jersey increase in the minimum wage in 1994 using as a control group the neighbouring state of Pennsylvania where the minimum wage was left unchanged. Basically, Card & Krueger (1995) compared employment growth in both states following the rise in the New Jersey minimum wage. No disemployment effect was evidenced. In another study, (also in Card & Krueger, 1995), the authors analysed the effect of the increase in 1991 of the federal minimum wage in Texas. Looking at differences in employment growth between restaurants that had to adjust their wages to the new minimum and restaurants that were paying wages above the new minimum, the authors found weak evidence of a positive employment effect of the increase in the new minimum wage. The "natural experiment" method has been heavily criticised, as it is difficult, in practise, to define a proper control group. There is always concern that the change in employment observed for the control group does not correspond to what would have happened to firms facing the minimum wage regulations, in the absence of these regulations.

The third approach focuses on the gains that arise from the introduction of the minimum wage. It consists of estimating four types of equations: the probability of earning less than the minimum wage, the minimum wage, or more, or earning nothing (in case of unemployment). Each equation is estimated before and after the introduction of the minimum wage. Such an empirical study was carried out using French and US longitudinal data by (Abowd *et al.*, 1999). The results for the USA show that for men (respectively women) employed at the minimum wage, an increase of 1 per cent in the real minimum wage entails a decrease in the probability of remaining employed of 1.3 per cent (respectively 1 per cent).

*Employment distribution effects*

Another possible effect of the minimum wage increase is to alter the distribution of employment among demographic groups. For example, a decrease in the minimum wage may cause a shift away from older workers towards younger workers, as it seemed to have happened in Mexico in the 1990s (Feliciano, 1998). The skill profile of minimum wage workers may also shift - away from those with more formal education towards those with little education. Feliciano, (1998) also reported large swings in estimated effects of the minimum wages across sexes for Mexico. The study concluded that the decrease of the minimum wage had a positive effect on the employment of women. Similarly, a differential impact of the minimum wage according to gender and age was also found for the USA as well as an adverse effect on the employment of younger workers (Mills, Roy & Williams, 1999).

By affecting the distribution of employment across groups of the population, changes in real minimum wages might have an impact on household poverty, an issue that is examined in the next section.

**Minimum wage and poverty**

Much of the justification for minimum wage regulation comes from the intention to provide income support to the poor. It seems however that in the presence of a minimum wage increase, some low-wage workers may gain and others lose, depending on the employment effect and the impact on average earnings.

***Theory***

Raising the minimum wage level in developing countries may contribute to widening the gap between workers in the covered sectors and the others. It would thus generate further poverty defined in relative terms. This argument was developed, for instance, for Malawi. Malawi has a small urban sector and a large and impoverished, mainly informal, rural sector. Different minimum wage rates apply in towns and rural areas and rates have been periodically increased but not sufficiently to compensate for the rise in consumer prices. According to Livingstone (1995) increasing the minimum wage within such a context would only result in driving workers from the rural areas to towns, who would look for a job but not necessarily find one. Therefore, the most efficient way of lifting workers out of poverty is to raise the price of labour through rural development, not to increase the minimum wage in urban areas.

There is at least one counter argument. In some developing countries, unskilled wages are a higher proportion of income of poor urban people than in developed countries where the poor are more likely to benefit from social income (Lustig & McLeod, 1997, p 65). Thus a minimum wage increase may lift relatively more low paid workers out of poverty in developing countries.

Furthermore, changes in the minimum wage may alter the labour supply behaviour of other members of the household directly affected by the minimum wage (ILO, 1997), with an effect on well-being.

To summarize, the effects on poverty are four-fold: firstly, some workers lose their job in the covered sector and assuming no unemployment benefit, receive zero income. Secondly, some workers previously employed in the covered sector find a job in the uncovered sector, and depending on the difference in wages in both sectors, may fall into poverty. Thirdly, some workers who kept their jobs in the covered sector are now earning more due to the introduction of the minimum wage. A proportion of them might escape poverty depending on the size of the minimum wage adjustment. Fourthly, a family may react

to a decrease in the minimum wage faced by one family member by increasing labour participation in the informal sector.

Thus theory leads to no clear predictions as to the effect of the minimum wage on poverty, as the overall effect depends on the value of several elasticities that are difficult to predict (Addison & Blackburn, 1999). As the effect on uncovered workers remain unclear, it makes sense to test the data and regress change in poverty rates on changes in the minimum wage. Theory however suggests that increases in the minimum wage might reduce poverty if the employment effect of minimum wage is small.

### ***Minimum wage and wage inequality***

At least two studies showed that the minimum wage may have a strong effect on the observed wage inequality. The USA, for instance, experienced a dramatic rise in wage inequality during the 1980s whose main dimensions are the sharp rise in wage inequality between more and less-educated workers and the growing disparity between more and less experienced workers. A recent study concluded that most of the growth in inequality in the bottom wage distribution is attributable to the erosion of the real value of the minimum wage during the 1980s (Lee, 1999). The impact of the minimum wage on the lower part of the wage distribution was also confirmed in Dutch data (Teulings, Vogels & van Dielen, 1998).

### ***Poverty and low-paid employment***

Low-paid employment is usually defined as giving rise to earnings representing less than 66 per cent of the median. It has been shown that the poverty rate for the working age population is systematically higher in OECD countries where low wage employment is more developed (Marx & Verbist, 1998). More specifically, poverty is quite considerable amongst households with dependent children when the head is in low-paid employment. However, the vast majority of two-adult households with at least two wage earners are out of poverty. On the contrary, the highest poverty rates are found in households with no adults at work. A similar relationship between the number of employed individuals within a household and poverty was observed for Chile. In 1994, poor Chilean households were about the same size as the national average, only the proportion of those at work differed: 0.8 persons employed in poor households against 1.2 (Bravo & Vial, 1997). A poverty reduction alternative to an increase in the minimum wage may thus be to have individuals in the lowest decile working.

### ***Financing minimum wage: who should bear the cost? Wage subsidies for unskilled workers***

It is often argued that minimum wages should be subsidized to encourage social integration through employment of the least skilled workers in the context of a decreasing demand for unskilled workers. Subsidizing enterprises that contract workers whose wages are below a certain level has been suggested as a mechanism to protect income from the poor in the case of Latin America (Inter-American Development Bank, 1998). As the Bank rightly noticed, there are problems with subsidizing firms in order to increase employment or support the income of the poorest workers. Besides being difficult to monitor, subsidies may also generate poverty traps as they reduce the incentive for firms and workers to raise productivity and wages above the threshold level. While wage subsidies may be used on a temporary basis with the above effect, it seems that social welfare encouraging labour force participation may turn out to be detrimental to minimum wage earners in the long run. The very idea of subsidizing work may easily imply that the work performed is not valuable. This in turn will put a downward pressure on the non-subsidised part of the minimum wage with the effect that the minimum wage may again become the maximum wage (Sachdev & Wilkinson, 1998).

### **Evidence**

Generally, the effect of the minimum wage on the income distribution is calculated using:

$$P_t = b_t + c(MW_t) + dX_t + v_t \quad (3)$$

for various groups of workers (all, teens...) where  $b$  represents year-specific intercept. This equation is estimated as a fixed-effects model.  $MW_t$  is the minimum wage at time  $t$ ,  $X_t$  contains average wage, percentage of minorities and a control for business cycle (very often the unemployment rate). Empirical evidence suggests a negative correlation between minimum wages and poverty. Using a sample of developing countries, Lustig & McLeod (1997) regressed change in poverty on a number of explanatory variables of poverty including real wages (either minimum wage or average wage) and the growth in per capita income. The level of human capital of the population and the share of agriculture employment are also amongst the independent variables as well as real public spending, terms of trade, unemployment rate divided by the number of years in the interval, inflation (if minimum wage is increased infrequently), and education expenditure as a per cent of GDP. The sample contains 22 countries and more than 40 time periods. The results suggest that higher minimum wages exert a stronger impact on diminishing poverty than higher average wages. Lustig & McLeod (1997) also found that the effect of the minimum wage on poverty is slightly higher in recovery periods. The analysis is replicated for several poverty measures including the poverty gap, the income gap and the per capita calorie intake.

Another study compares the situation of Costa Rica and Columbia, which adopted a policy of increasing the minimum wage with respect to the average wage during the adjustment process of the 1980s, with that of two other countries which experienced a relative decrease of the minimum wage: Chile and Guatemala (Camargo & Garcia, 1994). This study concludes that minimum wage adjustments – together with the decrease of unemployment and inflation – contribute to explain why poverty did not rise between 1984 and 1988, despite tough fiscal and exchange rate policies in Colombia. It also argues that the rise in the minimum wage with respect to the average wage in Costa Rica protected the position of the lowest-paid workers. In sharp contrast, a poor macro-economic policy and the decrease in the minimum wage with respect to the average wage lead to increased poverty and a reduced GDP growth in Guatemala.

On the one hand, we can conclude from the literature review that for low levels of minimum wage, theoretic effects on the level of employment are fairly small, except in the case where all the hypotheses of perfect competition are met. On the other hand, empirical studies lead to different conclusions. By contrast, there seems to be a correlation between the minimum wage and the reduction of poverty.

## **3. Recent developments in minimum wages**

What do we know about the behaviour of minimum wages in developing countries that could be related to the above theoretic predictions or results from empirical studies?

### **Instability of minimum wage**

It is often thought that minimum wages in real terms tended to decrease worldwide during the adjustment crisis of the 1980s before modestly recovering in the 1990s. While this

picture holds in the case of many Latin American countries, the evidence is more mixed in the case of Asia and Africa.

### ***Structural facts***

Huge swings in the value of the real minimum wage as well as in the average wage seem to have happened during 1980-1998 when the calculation is based on the IMF Consumer Price Index (CPI). Increases of 30-40 per cent and decreases in the order of 15 and 20 per cent are all common for both variables. Such extreme changes are an example of the difficulty in measuring real wage behaviour in countries with huge inflation rates. Much less variation has occurred in our main variable of interest: the ratio of the minimum wage to the average wage.

Examples of dramatic changes in the real value of the minimum wage are abundant. The data for Turkey (figure 1) displays huge swings in real minimum wage in rather short periods of time: + 40 per cent between 1989 and 1993 and - 20 per cent from 1994 to 1995. There was a tendency for the minimum wage to increase in Thailand from the mid 1980s to the mid 1990s (+ 20 per cent) while changes in the order of + or - 15 per cent occurred in the Philippines (figure 1).

Variations of the same order occurred in Sub-saharan African: Malawi at the beginning of the 1980s, Benin during 1992-1994 and in Malawi (figures 3a and 3b). Stability over a long period is observed for Burkina Faso during 1982-1992 and for Senegal between 1984 and 1995 where a dramatic drop occurred. For most Latin American countries displayed in figures 4a and 4b, variations of the minimum wage across time are very impressive.

In some countries, the minimum wage appears to be *relatively* stable over time with respect to average wage. Internal stability, however, does not imply a lack of variance among countries. For example, minimum wage levels in Malawi (1980-1986) and in Bolivia (1991-1996) represented less than 20 per cent of the average manufacturing wage (figures 5 and 7). Finally, the ratio is around 40 per cent in Botswana (1981-1997) while modestly increasing from 48 per cent to 54 per cent of the average wage in Thailand during 1986-1994 (figures 6 and 7).

In contrast, the proportion of the minimum wage to average wage swings over time in a number of countries. A deterioration of the ratio indicates that the wage gap widens between unskilled workers paid the minimum wage and skilled workers. The Philippines, for instance, experienced a continuous decrease in the ratio that went down from more than 60 per cent in 1981 to around 35 per cent in 1992 (figure 6). Similarly, the minimum wage in Ecuador represented a much bigger proportion of the average wage in 1980 at 65 per cent than in 1989 when it reached 45 per cent. The ratio in El Salvador, on the other hand, almost doubled between 1984 when it was 21 per cent and 1991 (42 per cent).

A comparison of the ratio in OECD and Latin America countries in the 1990s undertaken by the Inter-American Development Bank (1998) showed that the minimum wage represented more than 70 per cent of the average wage in Venezuela, Italy and El Salvador. Whereas on the opposite side of the distribution, the ratio was less than 35 per cent in a group of countries including Bolivia, Brazil, Chile and Spain. Finally, the minimum wage was close to half of the minimum wage in Switzerland, Colombia and Sweden.

Our data suffer from a number of weaknesses as they refer in some cases to the agricultural or rural minimum wage and in other cases to the non-weighted average, excluding part of the economy like agriculture. For Peru and Turkey, only the capital city is covered. In the cases where data do not represent the weighted average, we have to assume that trends in real minimum wages reported in the figures are representative of minimum wages at the national level. The ratio of the minimum to the average wage has fewer shortcomings.

### *Country evidence*

A first and important fact to mention is that minimum wage laws are routinely used: minimum wage regulations are therefore adopted in countries with very different economic and social situation (Shaheed, 1994). Another fact is that minimum wages decreased in real terms in a number of countries in the 1980s. In Latin America, minimum wages tended to decline in the region during the 1980s and have largely become non-binding (Cox Edwards, 1997). In Brazil, for instance, the ratio of the minimum wage to the average industry wage in Sao Paulo continuously fell from 1975, a time when it represented 161 per cent of the average wage to 1985, when it reached 93.4 per cent (Amadeo & Camargo, 1991). Overall, the minimum wage in Latin America lost more than 30 per cent of its value in real terms between 1980 and 1990. As a period of modest recovery followed (+ 1 per cent a year), the minimum wage at the end of the 1990s was still less than its 1980 value in most countries. In the case of Bolivia, El Salvador, Mexico and Peru, the level in 1997 was equivalent to one third of the 1980 level (ILO, 1997). The minimum wage dropped relatively more and then recovered less than industrial wages during 1980-1990. As a result, low-paid workers were disproportionately affected by the recession. The situation was similar in Chile with the exception of 1973. The minimum wage in Chile first rose in real terms from the 1960s to 1980, then it fell until 1987 (losing two-thirds of its value). Since that year, minimum wage has been increasing again. Contrary to what had happened in the previous decade, the minimum wage in the 1990s grew more than the average wage (Bravo & Vial, 1997).

Studies on Ghana show that the minimum wage applying to public sector workers halved in real terms during the period of the 1970s to the early 1990s. The same pronounced drop is observed for starting wages in the manufacturing sector. As GDP per capita had constantly been rising over the same period of time, these results mean that earners in manufacturing have not yet benefited from the rise in aggregate income that followed the introduction of a structural adjustment programme in 1983 (Centre for the Study of African Economies (CSAE), 1999). Another study on Ghana confirms that wages earned by unskilled workers have relatively been more affected by the fall in real wage levels (CSAE, 1999). For example, real wages for unskilled males and apprentices markedly decreased from 1992 to 1996, while real wages for skilled workers rose, albeit at a modest rate. Thus the relative situation of the poorest paid workers (including new entrants to the labour market) deteriorated further in the 1990s.

In the 1980s, an interventionist wage policy was adopted by the Government of Zimbabwe. As a result, the minimum wage increased in real terms up to 1990/1991. Some argue that this policy did not ensure a growth of income and wage employment in the formal sector, and thus minimum wage policy was progressively abandoned (CSAE, 1999). Finally, the economic reform of 1990 suppressed the legal minima except for domestic workers and gardeners. Foroma (1996) argues that job losses due to the setting of minimum wages were particularly severe during the mid-1980s, but provides no evidence to back up this fact. As the author notes himself, "it is difficult to quantify the impact that job security legislation and the minimum wage had on investment because other strong factors (such as foreign exchange shortages and price and exchange controls) were also at play" (p 249).

In India, the minimum wage, which applied to a small formal sector, varies across occupations, industries and states. Minimum wages are not regularly adjusted to price increase so that most states have been paying a cost of living allowance to workers to compensate for inflation. As a result, minimum wages in real terms decreased between 1983 and 1988 in half of the major Indian states while they increased between 1988 and 1994 in most states (Annant & Sundaram, 1998).

In Papua New Guinea, minimum wage regulation was introduced in 1972 and then dismantled in 1992. By 1995, it seemed that real wage decreases had been substantial for both skilled and unskilled labour (Levantis, 1997). However, in the case of unskilled workers,

the wage decrease was inferior to that allowed by the reduction in the minimum wage: wages received by unskilled workers in 1995, while below the pre-1992 official minimum wage were well above the new minimum. One reason is that the new minimum wage only applied to newly hired workers causing large regulated firms to be reluctant to discriminate between new workers and continuing employees performing the same job.

The above evidence shows that the stated goal of providing low-paid workers with decent living conditions is not systematically reflected in the process of adjusting minimum wages. In practise, the minimum wage in Indonesia is adjusted according to changes in labour productivity, the growth of employment and the change in GDP/capita, etc. (ILO, 1998). In Thailand, changes in minimum wages used to be based on changes in CPI but since 1990, minimum wage adjustments also depend on GDP growth. As a result, the minimum wage has been growing faster than the average wage (ILO, 2000). In the Philippines, the change in the consumer price index seems to be the main criteria for updating minimum wages. In theory, though, 11 criteria should enter into the determination of the minimum wage. In Mexico, the objectives of maintaining or increasing the purchasing power of the minimum wage conflicted with other objectives of structural adjustment policy. After the debt crisis of 1982, the reduction of inflation was the main criteria for fixing the minimum wage as adjustments were indexed over expected future inflation (Marinakos, 1998).<sup>3</sup> Such conflicts between the objectives of economic policy also occur in industrialized countries. In the USA for example, the recent minimum wage increase (1996) was explicitly aimed at lifting out of poverty heads of households working full-time and their children. During most of its history, though, the minimum wage in the USA has not been consistent with this stated goal: what explains most the changes in the level of the minimum wage in the USA are political pressures during the process of adopting the Minimum Wage Bill (Sobel, 1999).

In conclusion, the minimum wage within some countries is a very unstable variable, both in real and relative terms. In some countries, workers seem better protected against an increase in consumer prices and the minimum wage follows more closely variations in the average wage.

## Compliance

The setting of the minimum wage provides in principle a floor to earnings for workers. However, the legislation of most countries excludes groups of workers from the scheme who thus legally earn subminimum wages. Estimates of the share of workers covered by a minimum wage system are scarce. In South Africa, for example, about 64 per cent of workers in the manufacturing sector are covered. Amongst the agricultural countries represented in our sample, minimum wage regulation only applies to a very small formal sector. This was the case of Botswana in 1995 with 235,000 employees in the formal sector out of a population of 760,000 aged 15-64. Similarly, in Burkina Faso, Mali and Malawi, 80 per cent at least of the labour force is engaged in farming and fishing.

Besides legally non-covered workers, some workers earn wages below the minimum because the employer fails to comply with the legislation. The extent of non-compliance practises may contradict the objective of equality and fairness of the minimum wage. As documented by several studies, most governments appear not to enforce strict compliance with minimum wages. The study by Gindling and Terrell (1995), for example, estimates the number of workers earning wages below the minimum in Costa Rica, both illegally and legally (part-time workers and the self-employed, who in 1990 represented respectively 41 per cent and 16 per cent of the working population are excluded from the minimum wage system). The study concludes that the minimum wage failed to act as an effective floor as one

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<sup>3</sup> It should be noticed that the drop in the real minimum wage and also in the average wage in manufacturing that followed this policy shift did not ensure a decrease in inflation.

third of workers in the covered sector (full-time employees) were paid less than the minimum wage and the same proportion in the uncovered sector. In Guatemala, the National Socio-Demographic Survey estimated that persons working 40 hours a week or more and whose income is less than the minimum wage of the branch of activity concerned represented 49.4 per cent of urban employment in 1987 against 53.5 per cent in 1989 (source: ILO, 1999). In the Philippines, the ILO (1997) reports a low level of compliance due to the absence of real penalties for underpayment of the minimum wage. In 1994 in Chile, 9.4 per cent of wage earners were paid less than the minimum wage (Bravo & Vial, 1997).

In Ecuador, the fine for non-compliance with labour legislation cannot exceed five times the national minimum wage regardless of the severity of the fault and the number of workers involved.

In Indonesia, about 15 per cent of workers in manufacturing are paid less than the minimum wage. This proportion rises to 26.9 per cent for women and 20.6 per cent for workers (under 25) (Rama, 1996).

In India, a statutory minimum wage is focused on the informal or unorganized sector, which represents more than 90 per cent of the labour force. However, in general, minimum wage levels are not enforced, for agricultural labour, actual earnings were on average below the minimum wage in almost all states (Annant & Sundaram, 1998).

Non-compliance is extensive but not limited to small-scale enterprises. An analysis conducted by the ILO (1997) revealed that 63 per cent of workers in micro-enterprises in Costa Rica, received sub-minimum wages. This percentage amounts to 46 per cent in Panama, 38 per cent in Venezuela, 28 per cent in Chile, 19 per cent in Mexico and 16 per cent in Colombia and Brazil. On the other hand, 8 per cent of Mexican workers in large enterprises (more than 300 workers) earned wages at or below the minimum wage (Bravo & Vial, 1997). Another study found opposite results as to the extent of non-compliance to minimum wages in micro enterprises from 7 developing countries (Morrison, Solignac Lecomte & Oudin, 1994). The study showed that most micro enterprises of these countries respected the minimum wage law with the exception of the 2 poorest countries in the sample: Niger and Swaziland.

Everything else equal, non-compliance is expected to be more widespread the higher the ratio of the minimum to the average wage. This positive relationship was found for 12 South-American countries (Inter-American Development Bank, 1998). Non-compliance levels were estimated to be below 10 per cent in countries where the minimum wage is below 30 per cent of the average wage (Argentina, Chile, Bolivia) and more than 35 per cent in countries where the minimum wage represents at least 60 per cent of the average wage like in Paraguay, El-Salvador and Venezuela (Gindling and Terrell, 1995).

A sub-minimum wage labour force is also rather common in developed countries. In 1990, 7 per cent of wage earners in France, mostly young people employed in publicly-funded programmes, had wages below the minimum wage level while 6.6 per cent had wage at the minimum. In the USA, in 1981, 4.5 per cent of the employees had wages below the minimum wage and 13.2 per cent at the minimum (Abowd *et al*, 1999).

## **Who are the minimum wage earners?**

### ***Sectoral and individual characteristics***

The proportion of the labour force which receives the minimum wage differs by sector. In some countries, many minimum wage workers are to be found in the export sector. In this case, it is often suspected that a higher minimum wage when compensated by an increase in the price product may have an adverse effect on the volume of exports. However, if the minimum wage mainly applies to the service (public) sector, then the impact on the price of goods produced for export may be quite small. Again in the service sector, workers may be less likely to be replaced by machines and a higher minimum wage may only

marginally affect the employment in this sector. When civil servants and state firm workers are covered by minimum wage regulations, the state must collect the resources to finance the supplementary costs resulting from higher minimum wage.

Similarly a high minimum wage may induce teenagers to leave secondary school early and start working instead. The incentive to leave school may be higher in industrialised countries where minimum wage mandates mainly affect teenagers, young workers and workers with low levels of education like junior high school dropouts, although there are some exceptions.

In Chile, minimum wage earners are disproportionately represented in the agricultural sector, which produces export goods: a quarter of workers in agriculture were paid at or below the minimum wage in 1994 (Bravo & Vial, 1997). Thus the fixation of the minimum wage should take into consideration the competitiveness of agriculture if the minimum wage is compensated through a price increase.

In other countries, minimum wages have little impact on exports: Standing, Sender & Weeks (1996), for illustration, assess that the minimum wage would not hit South African exports since the main exports sectors tend to have relatively high wages. The situation looks different in Mexico where there exists a massive low-paid export processing industry called "maquiladoras". Maquiladoras are factories located in low-wage regions in which workers assemble imported materials for export. Maquiladoras of Tijuana, for example, mainly employed women (married women, women with children, and women with low levels of education) who earn less than women in service and commerce whatever the education levels and less than self-employed women, except at the lowest educational level (Fussel, 2000).

Depending on the national conditions, more women or more men are paid the minimum wage. In Chile, more men are paid the minimum wage, especially in the rural world, where the labour force participation of women is low (Bruno & Vial, 1997). One study on Costa Rica showed that workers earning *below* the minimum wage are disproportionately women, non-heads of household, less than 19 or older than 60, have low education and live in rural areas not in the Central Valley (Gindling and Terrell, 1995).

### ***Poverty of minimum wage workers***

Assuming complete compliance with minimum wage regulations, minimum wage earners in the private sector are by definition at the bottom of the earnings distribution. This tells us little about the position of minimum wage earners in the income distribution, which depends not only on the level of earnings but also on household structure and labour supply, and income other than a wage. The evidence on the poverty of minimum wage earners is therefore not conclusive, depending on the country focused on and the type of study. In Chile, less than 50 per cent of minimum wage earners are considered to be poor (Bravo & Vial, 1997). There is more evidence in industrialized countries. In France, households with the highest share of individuals paid the minimum wage are in the 3rd lowest income decile (Dolado et al, 1996) while one third of minimum wage earners in Spain belong to the first bottom decile of household income (Dolado et al, 1998). In conclusion, it seems that little is known about the poverty of minimum wage earners in developing countries.

What emerges in the first place from section 3 is the huge swings in the minimum wage in real terms and much less with respect to the average wage. In the second place, the minimum wage represents a different proportion of the average wage across countries and in some countries across time. Furthermore, there are legal sub-minimum wages and little enforcement of the minimum wage regulation in several countries. Finally, minimum wage earners do not seem to belong systematically to the poorest segments of the population.

#### 4. Empirical analysis

Most figures on the minimum wage used in this section come from a database created in early 2000 (the ILO bureau of statistics provided the data on minimum wages, which were then compiled by the WIDER Institute), while a few other data were provided by field offices and Labour Ministries. Other variables, like the growth in GDP, GDP per capita, share of GDP spent on education and working-age population were taken from the World Development Indicators (World Bank, 2000). The ILO provided the figures on employment, informal employment and unemployment. CPI comes from the IMF.

**Table 1: The informal sector in Latin America**

Country	Year	Informal	MW/AW
Bolivia	1992	.507	0.195
-	1993	.547	0.21
-	1994	.561	0.213
-	1995	.582	0.213
Colombia	1991	.504	0.369
-	1992	.506	0.388
Paraguay	1991	.520	0.895
-	1992	.521	0.861
-	1993	.509	0.769
-	1994	.572	0.754
Brazil	1995	.482	0.178
Chile	1991	.421	0.173
-	1992	.424	0.171
-	1993	.433	0.368
-	1994	.449	0.35
-	1995	.447	0.352
Mexico	1991	.503	0.245
-	1992	.505	0.219
-	1993	.515	0.233
-	1994	.516	0.225
-	1995	.540	0.23

Column "Informal" gives the share of the informal sector in total employment (source: ILO) while MW and AW represent respectively the minimum and the average wage.

## Effect on employment

### *Minimum wage and employment*

#### *Minimum wage and the informal economy*

The time series data on the informal economy in Latin America provided by the ILO (Regional Office, Lima) were used to analyse the relationship between the growth of the informal economy and changes in the minimum wage. The main variables of interest are summarized in Table 1, which gives the share of urban informal employment in total employment and the ratio of the minimum to the average wage. Informal sector employment included all own-account workers – excepted professionals – and all workers in establishments with less than 5 or 10 persons engaged.

In what follows, we try to measure the role of the minimum wage on changes in the size of the informal sector. A very simple reduced-form equation is tested. On the labour supply side, change in GDP/capita should measure the income incentive associated with the supply of labour in the informal economy while on the labour demand side, log change in the ratio of the minimum wage to the average wage represents changes in the flexibility of the labour market for unskilled labour with respect to more skilled labour.<sup>4</sup> Our independent variable is the annual change in the log of the share of the informal economy. The results of this regression, which are summarized in Table 2, suggest that increases in GDP/capita tend to reduce urban informal employment significantly.

In contrast, changes in the ratio of the minimum to the average wage seem to exert no significant impact on the share of the informal economy. Using changes in real minimum wages in place of changes in the ratio does not improve the significance of the coefficient. This result tends to support the view that labour market rigidity and more specifically wage rigidity introduced by minimum wage regulation is not the main responsibility of the informality of Latin American economies.

**Table 2: OLS regression of the share of the informal sector on the minimum wage**

Variables	Specification 1	Specification 2	Specification 3
DGDPCAP	.301**(.124)	.314**(.139)	.311 ** (.131)
OVER (MW/AW)	-	-.027 (.018)	-.051 (.107)
DLNWAGE	-	-	-.026 (.112)
R2	.171	.199	.202
Observations	55	21	21

The independent variable is the log change in the share of the informal employment in total employment. Robust standard errors are in parenthesis (White estimator). \*\* indicates the coefficient is significant at the 5 per cent level.

<sup>4</sup> GDP/capita is also a demand-side variable.

*Minimum wage and overall employment*

As an attempt to relate changes in the minimum wage to changes in employment, the following equation was estimated using our data:

$$DLNEMPO = \beta_0 + \beta_1 GDP + \beta_2 AFRICA + \beta_3 ASIA + \beta_4 LATIN + \beta_5 DLNREALW + \beta_6 DLNOVER + \beta_7 DTRADE + \beta_8 DLNEDUC + e$$

where *DLNEMPO* is the log annual change in the ratio of employment to the population. The vector of regressors contains dummies controlling for location: *AFRICA*, *NORTHAF*, *ASIA*, *LATIN* and the base *TURKEY*, unless otherwise noted. *GDP* is the rate of growth of GDP while *DLNREALW*, *DLNOVER* and *DLNEDUC* are respectively the log annual change in real average wage in manufacturing, the ratio of the minimum wage to the average wage and the percentage of GDP spent on education. Finally, *DTRADE* represents change in terms of trade from one year to another.

The results, which are displayed in Table 3, show that GDP growth is positively correlated with the increase of employment whatever other factors are controlled. The effect of other variables is much more unstable, for example that of the increase in the real wage rate. From the third regression in Table 3, it would seem that the increase of the real average wage in manufacturing plays a significant and negative role on the level of employment. This effect of the real wage becomes however insignificant once the ratio of the minimum wage to the average wage and the educative variables are introduced as explanatory variables. In all cases, we are unable to identify a significant effect of changes in the ratio of the minimum wage to average wage that would explain variations in employment. Restricting the analysis to manufacturing employment or excluding specific geographic areas like Africa leads to the same conclusion.

**Table 3: OLS regression of employment on the minimum wage**

Variables	Specification 1	Specification 2	Specification 3
DGDPCAP	.004**(.001)	.005**(.002)	.005* (.003)
AFRICA	-.074** (.032)	.078**(.038)	.069 (.052)
ASIE	-.082** (.034)	.026 (.040)	.015 (.054)
NORTHAF	.007 (.027)	-	-
LATIN	-.068 **(.031)	.027(.038)	.036 (.056)
DLNOVER	-	-.051 (-.107)	.003 (.179)
DLNWAGE	-	-.156 (.104)	-.026 (.112)
DTRADE	-	-	.000 (.000)
DLNEDUC	-	-	-.036 (.108)
R2	.071	.141	.05
Observations	218	60	48

The independent variable is the log change in employment. Robust standard errors are in parenthesis (White estimator). \*\* indicates the coefficient is significant at the 5 per cent level and \* at the 10 per cent level.

The extent of non-compliance practises in developing countries (see section 3) is expected to reduce the employment effects of minimum wages and may explain part of our results. There is another simple explanation for the low often found disemployment effect caused by minimum wages. The decrease in the real minimum wage during most of the 1980s in many countries might be responsible for the small employment effect as a low value of the minimum wage is unlikely to cause much unemployment. There is a simple way of checking for such an effect: if the minimum wage has a negative impact on employment, we would expect this negative impact to be stronger in countries with a relatively high level of minimum wage. This kind of cross-section analysis leads to no significant result on our data set.

## **Effect on poverty**

### *Poverty line*

Table 4 describes our data on the minimum wage and poverty by giving the minimum wage in dollars in the mid 1990s and the ratio of the minimum wage to the poverty lines at US\$1 and US\$2 a day for 31 countries. The data are presented by region. North-African countries have a relatively high minimum wage with more than US\$100 a month while the minimum wage in all Sub-Saharan African countries except Senegal are under US\$50 a month. The figure for most Latin-American countries is between US\$40 and US\$70 with a few countries enjoying a much higher minimum wage (Chile, Paraguay and Costa Rica). The two Asian countries have minimum wages of around US\$100 a month. The minimum wage is above the poverty line at US\$1 a month in most, though not all, countries. In contrast, the minimum wage in dollars is below the poverty line at US\$2 a month in all Saharan African countries except Senegal and also in a few countries of Latin America. Obviously, we are ignoring the fact that a minimum wage earner may be the main income support of a household when making the comparison between the level of the minimum wage and the poverty line.

Table 5 gives the results of regressing poverty on national minimum wages expressed in dollars, on average wages in dollars, GDP per capita and location. Several measures of poverty are used: the share of population living below the national poverty line and the share of population living with less than US\$1 and US\$2 a day. The second column of Table 5 shows that the level of the minimum wage in dollars is a negative and significant determinant of the level of the national poverty line. What is more striking is the finding that this relationship persists after controlling for the average wage. The relationship between the minimum wage and poverty remains when the level of development, as approximated by GDP/capita and location are introduced as explanatory variables.<sup>5</sup> This can be seen from the bottom of Table 5 (second column), which relates the share of population in poverty to GDP per capita in dollars GDPCAP, minimum wage in dollars MINWDOL, average wage in dollars AWAGEDOL and four regional dummies.

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<sup>5</sup> The correlation between GDP/capita and the minimum wage in dollars is 0.29 and that between the minimum and the average wage is 0.75.

**Table 4: Ratio of minimum wages to poverty lines in developing countries**

Region	Country	Year	MW	\$1 a day	\$2 a day
North Africa	Morocco	1996	157.5	4.9	2.5
	Tunisia	1993	119.4	3.7	1.9
	Algeria	1990	111.7	3.4	1.7
Sub-Saharan Africa	Burkina Faso	1996	48.3	1.5	.7
	Botswana	1996	40.7	1.3	.6
	Togo	1993	48.6	1.5	.7
	Niger	1994	33.8	1.0	.5
	Mali	1996	28.2	.9	.4
	Malawi	1986	11.05	.3	.2
	Benin	1996	32.8	1.0	.5
	Côte d'Ivoire	1996	8.9	.3	.1
	Senegal	1996	70.3	2.2	1.1
	Latin America	Mexico	1996	67.9	2.1
Venezuela		1996	70.3	2.2	1.1
Uruguay		1996	76.6	2.4	1.2
Peru		1989	42.8	1.3	.7
Paraguay		1997	241.2	7.4	3.7
Ecuador		1989	60.8	1.9	1.0
Costa Rica		1985	110.2	3.4	1.7
Colombia		1992	61.5	1.9	.9
Chile		1995	127.8	3.9	2.0
Brazil		1994	67.0	2.1	1.0
Bolivia		1996	43.9	1.4	.7
Guatemala		1992	62.7	1.9	1.0
Guyana		1996	45.3	1.4	.7
El Salvador		1990	44.2	1.4	.7
Asia		Azerbaijan	1993	5.0	.15
	Turkey	1996	138.3	4.3	2.1
	Philippines	1992	85.6	2.6	1.3
	Thailand	1994	105.3	3.3	1.6
	Syria	1989	115.8	3.6	1.8

Source: ILO minimum wages expressed in US dollars. The poverty lines are \$1 a day and \$2 a day in 1985 prices, equivalent to \$1.08 a day and \$2.15 a day in 1993 prices when adjusted for purchasing power parity using rates from the Penn World Tables.

**Table 5: OLS regression of poverty measures on the minimum wage (SE in parenthesis)**

Variables	National	\$1 a day	\$2 a day
MINWDOL/1000	-0.771** (.271)	-0.430 (.334)	-0.906** (.439)
R-squared	.223	.049	.138
Observations	22	17	17
MINWDOL/1000	-0.901** (.417)	-0.078 (.200)	-0.502 (.321)
AWAGEDOL/1000	-0.055 (.151)	-0.185* (.106)	-0.233 (.162)
R-squared	.479	.237	.383
Observations	18	13	13
MINWDOL/1000	-0.823** (.376)	-0.296 (.358)	-0.763 (.478)
AWAGEDOL/1000	-0.052 (.000155)	-	-
GDPCAP/1000	-0.023 (.022)	-0.076 (.049)	-0.080 (.056)
R-squared	.499	.237	.266
Observations	18	17	17
MINWDOL/1000	-0.676* (.388)	-0.067* (.326)	-0.312 (.412)
AWAGEDOL/1000	-0.018 (.159)	-	-
GDPCAP/1000	-0.063* (.0348)	-0.043 (.035)	-0.051 (.041)
LATIN	.165** (.086)	.184** (.035)	.223** (.047)
NORTHAF	-0.045 (.091)	-0.028 (.048)	-0.078 (.065)
AFRICA	.099* (.114)	.442** (.096)	.487** (.100)
R-squared	.722	.79	.79
Observations	18	17	17

The independent variable is the percentage of population below the poverty line. Robust standard errors are in parenthesis (White estimator). \*\* indicates the coefficient is significant at the 5 per cent level and \* at the 10 per cent level.

The effect of the regional dummies is estimated with respect to the effect of poverty in Thailand and the Philippines. The regression shows that for a constant level of GDP per capita and average wage and controlling for location, a higher minimum wage is associated with a lower national level of poverty. With the help of the estimated coefficients, it is now possible to calculate the elasticity of poverty with respect to changes in the minimum wage. This value is often estimated by computing it at sample means, where the minimum wage is in our case US\$214 a month and the poverty rate, 31.6 per cent. The elasticity at sample means is equal to 0.459: a 1 per cent increase in the minimum wage is equivalent to a 0.46 per cent reduction in the level of poverty. Finally, the fit of the regression is rather good ( $R^2=.48$ ).

The above analysis is based on the national poverty line. The regression can also be run on a smaller group of countries using the US\$1 or the US\$2 a day poverty line. The share of population below these two poverty lines is taken from the World Bank (2000). As can be seen from the third column of Table 5, the level of the minimum wage in dollars is not significantly associated with the share of population below US\$1 a day. In fact, none of our independent variables is able to explain the level of poverty using the US\$1 a day threshold. This result confirms our intuition that minimum wages in developing countries do not apply to the poorest share of the population, but rather to the less poor of the low-income population.

Indeed, the minimum wage in dollars is a significant determinant of the larger share of the population below US\$2 a day (fourth column of Table 5). However, the coefficient of the minimum wage becomes insignificant when adding controls for GDP per capita, average wage and location.

As this study focuses on poverty, wages in dollars are expressed using the PPP conversion factor developed by the World Bank. Estimating the equations with wages expressed in dollars using the official exchange rate leads to the same conclusion as to the impact of the average and the minimum wages on poverty.

In conclusion of the above analysis, we can say that there are indications that a higher minimum wage is associated with a lower level of poverty. This result does not imply *per se* that setting a higher minimum wage would reduce poverty but is merely the sign of a correlation between both variables. This correlation could for instance indicate that countries with a high minimum wage are also more committed to the reduction of poverty and have developed social policies targeted to the poor. Furthermore, there seems to be little relation, if any, between the minimum wage and extreme poverty as measured by the US\$1 a day international poverty line.

### ***Unemployment***

Indicators of poverty other than poverty lines have been suggested to measure the minimum wage effect such as the level of unemployment. Lustig & Mcleod (1997) for instance evaluate the effect of changes in real minimum wages on changes in unemployment rates controlling for real public spending, human capital and terms of trade. The study concludes that the real minimum wage increases unemployment, a result that is often quoted in the literature (for example, Inter-American Development Bank, 1998). The way the independent variable unemployment is defined is not clear from this analysis as "the unemployment variable is the change in the unemployment rate divided by the number of years in the interval"; it is therefore difficult to reproduce these results. However, using a bigger sample of 40 observations, we found the opposite result: an increase in the minimum wage with respect to the average wage decreases the unemployment rate (Table 6). This result remains remarkably stable across specifications and using various definitions of the variables. This regression explains however very little of the variation of unemployment rates as the R<sup>2</sup> is less than 10 per cent.

**Table 6: OLS regression of the level of unemployment on the minimum wage**

	Specification 1	Specification 2	Specification 3	Specification 4
MW/AW	-.975** (.409)	-.828* (.464)	-1.023** (.473)	-1.156 (.723)
ASIE	-.002 (.086)	.005 (.089)	-.012 (.099)	.028 (.112)
GDP	-	-.010 (.011)	-.003 (.013)	-.000 (.018)
DTRADE	-	-	-.012 (.012)	-.014 (.016)
LNEDUC	-	-	-	.002 (.212)
Observations	38	36	33	29
R2	.09	.12	.14	.12

The independent variable is log change in employment from one year to another. Robust standard errors are in parenthesis (White estimator). \*\* indicates the coefficient is significant at the 5 per cent level and \* at the 10 per cent level.

Therefore, we do not infer any conclusion on the link between the unemployment rate and the minimum wage.

## 5. Conclusion

After years under attack for its negative effect on low-paid employment, the minimum wage seems to be back in favour as a mean of providing unskilled workers with decent living conditions. Several factors are responsible for the renewed interest in the minimum wage as a tool of market policy. First, several 1990s studies showed that the minimum wage had little, if any, disemployment effect. Second, there is a new human rights approach that focuses on the right to have decent employment. In the developing world, policy makers are not only concerned with the impact of the minimum wage on employment, but also with its impact on the level of poverty. Both effects are difficult to estimate in the presence of the uncovered sector and practises of non-compliance.

From the theoretic literature review on the minimum wage, we concluded that the static model of pure and perfect competition (homogeneity of goods and workers, perfect information, many small suppliers and buyers) is a unique case where the minimum wage has a definite negative effect on employment. If one of the hypotheses of perfect competition is removed (workers are heterogeneous or paid the efficiency wage, there are a few employers) or dynamics are introduced (minimum wage affects the household's labour supply or the aggregate demand), the impact of the minimum wage on employment cannot be predicted in advance. This seems to be valid also in an economy with a sizeable informal sector. It is therefore not surprising that many empirical studies could not find evidence of a negative effect for moderate increases in the minimum wage on employment. As far as the impact of the minimum wage on the level of poverty in developing countries is concerned, predictions of theoretic models are less firm. At least one empirical and cross-country study showed that increases in the minimum wage are associated with a lower level of poverty when other factors are held constant.

This paper shows evidence of a high instability of the minimum wage in real terms in many developing countries. Yet some countries have been able to protect the purchasing power of minimum wage earners better than others. The ratio of the minimum wage to the average wage in manufacturing is shown to vary considerably between countries and within countries across time. In some countries, the minimum wage appears to be *relatively* stable

over time with respect to the average wage. Internal stability, however, does not imply a lack of variance among countries. For example, minimum wage levels in Malawi (1980-1986) and in Bolivia (1991-1996) represented less than 20 per cent of the average manufacturing wage. In contrast, the ratio is around 40 per cent in Botswana (1981-1997) while modestly increasing from 48 per cent to 54 per cent of the average wage in Thailand (1986-1994). Finally, the proportion of the minimum wage to the average wage swings over time in a number of countries (The Philippines, for instance, experienced a continuous decrease in the ratio, a decline from more than 60 per cent in 1981 to around 35 per cent in 1992).

The time series data on the informal economy in Latin America were used to analyse the relationship between the growth of the informal economy and changes in the minimum wage. A simple reduced form is tested. On the labour supply side, change in GDP/capita should measure the income incentive associated with the supply of labour in the informal economy while on the labour demand side, change in the ratio of the minimum to the average wage represents changes in the flexibility of the labour market for unskilled labour with respect to more skilled labour. Our independent variable is the annual change in the share of the informal economy. The results of this regression suggest that increases in GDP/capita tend to reduce urban informal employment significantly. In contrast, changes in the ratio of the minimum wage to average wage seem to exert no significant impact on the share of the informal economy. This result tends to support the view that labour market rigidity and more specifically low wage rigidity is not the main responsible for the informality of Latin American economies.

One of the main objectives of this study is to determine the relationship between changes in employment and changes in the ratio of the minimum to the average wage (which measures the relative price of unskilled labour and therefore the bite of the minimum wage in the wage structure). We thus estimated a regression that related changes in the ratio of employment to population to the following variables: changes in the ratio of the minimum to the average wage, growth of the real average wage, changes in the terms of trade, GDP growth and changes in educational levels). Our results suggest that other things equal, the level of the minimum wage has an insignificant effect on the level of employment.

The number of countries in our sample enables us to estimate the effect of the minimum wage on the level of poverty using cross-section data. As expected, the level of the minimum wage (in dollars) is a negative and significant determinant of the level of poverty. What is more striking is that this relationship persists after controlling the level of development, as approximated by GDP/capita, average wage in manufacturing and location. The regression shows that for a constant level of GDP per capita and average wage in manufacturing, and controlling the location, a higher minimum wage is associated with a lower national level of poverty. This analysis was based on national poverty lines. Using a smaller group of countries, the regression could be run using the US\$1 or US\$2 a day international poverty line. The result shows that the level of the minimum wage in dollars is not significantly associated with the share of population earning below US\$1 a day. This result confirms our intuition that minimum wages in developing countries do not affect the poorest share of the population, but rather the upper levels of the low-income population.

In contrast, the minimum wage in dollars does correlate with the share of the population earning below US\$2 a day. Still the minimum wage is not significantly associated with a lower level of poverty at US\$2 a day when other factors are held constant.

This result gives some support to the idea that national poverty lines, which are defined with respect to income distribution seem to correspond more closely to the ILO "decent work" approach to poverty reduction.

In conclusion, the data analysis gives strong support to the idea that the minimum wage may bring positive results in poverty alleviation by improving the living conditions of workers and their families while having no negative results in terms of employment. No

evidence of the effect of the size of the minimum relative to the average wage on the size of the informal economy in Latin America was found either.

Yet the consequences of setting a minimum wage are manifold and go beyond the impact on the level of employment and poverty. Raising the minimum wage may have an effect on incentives to provide training and productivity, as well as on working conditions and prices. Yet, effects other than on poverty and employment levels have received little attention even within the context of the more industrialized developing countries. The idea that a decent minimum wage may force firms of these countries to use more efficiently their labour force has yet been little explored.

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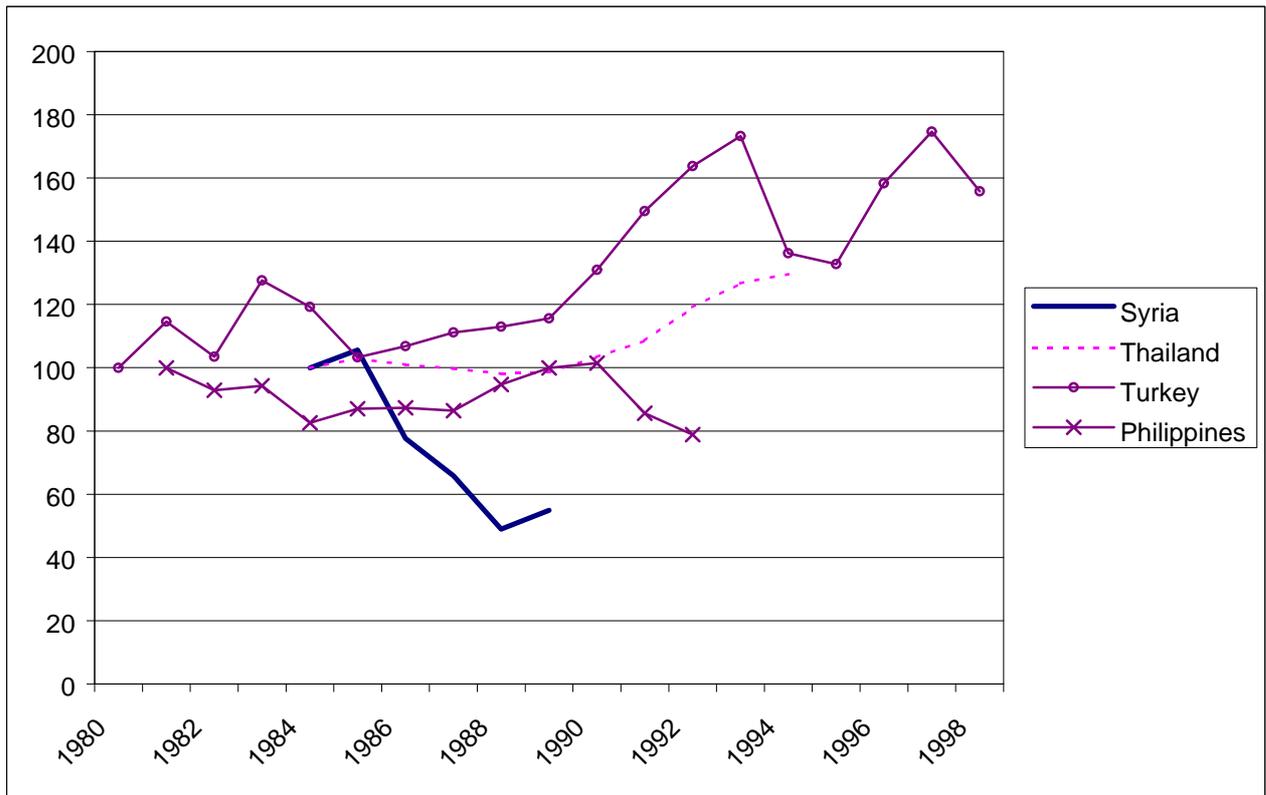
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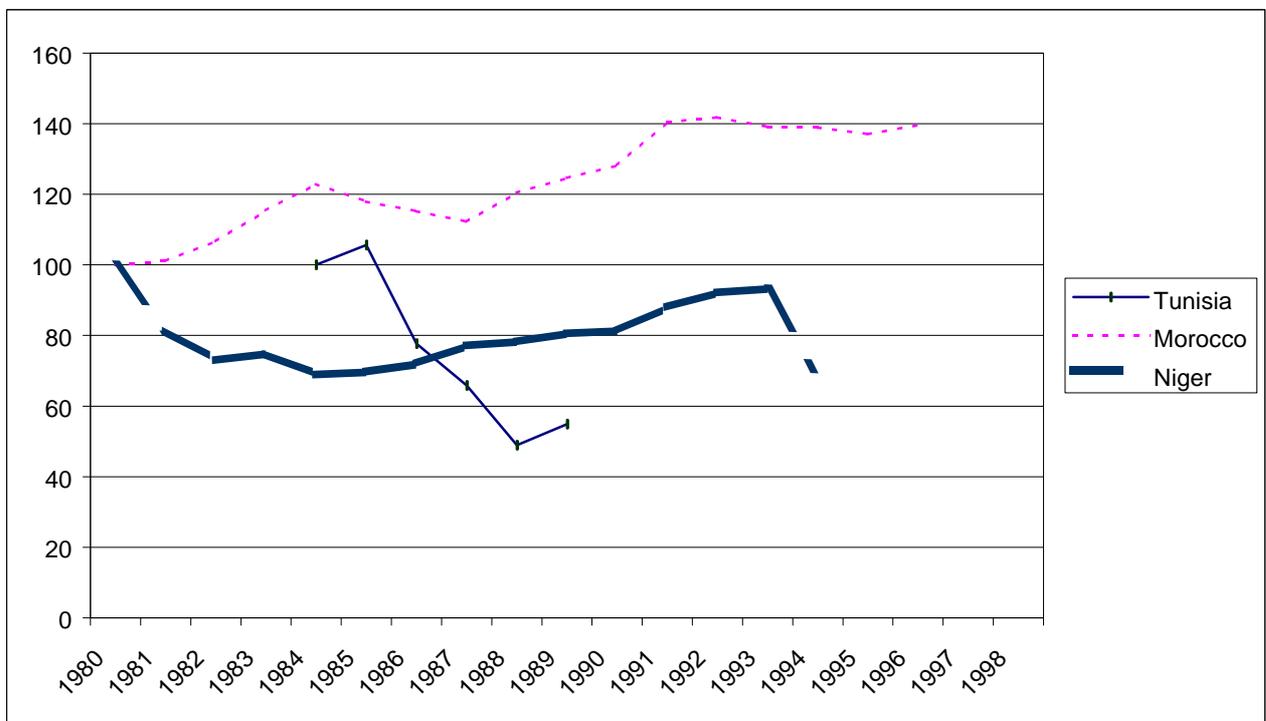


## **Appendix**

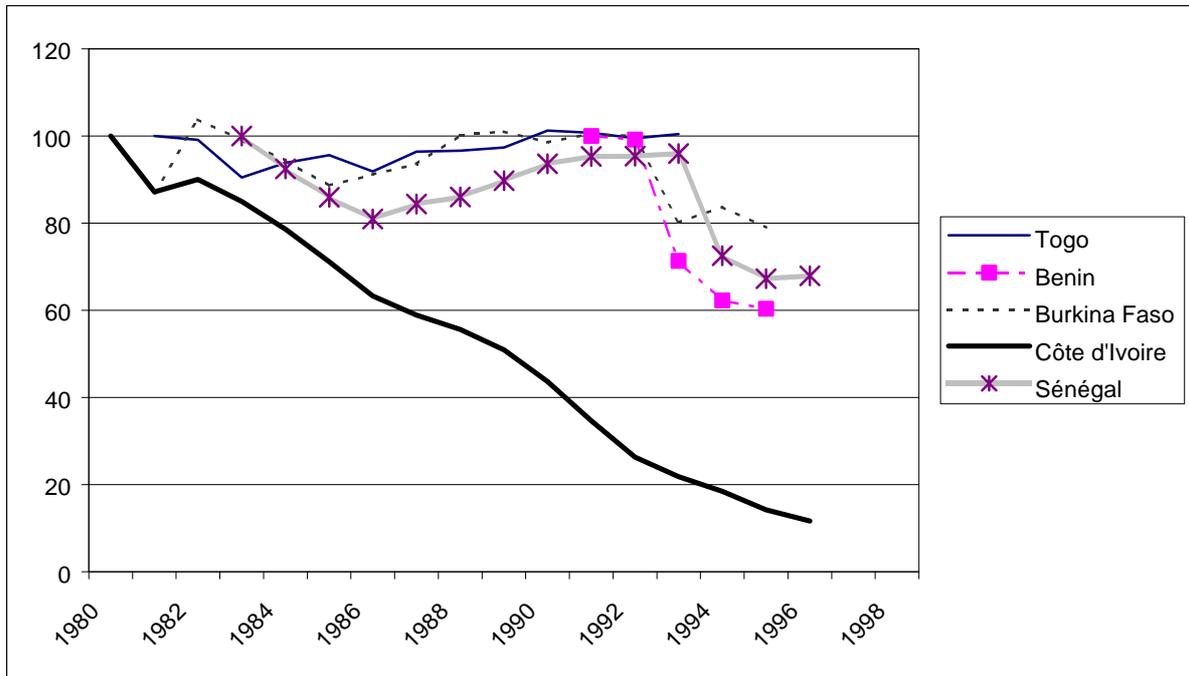
**Figure 1: Evolution of minimum wage in real terms (1980-1998) – Asia**



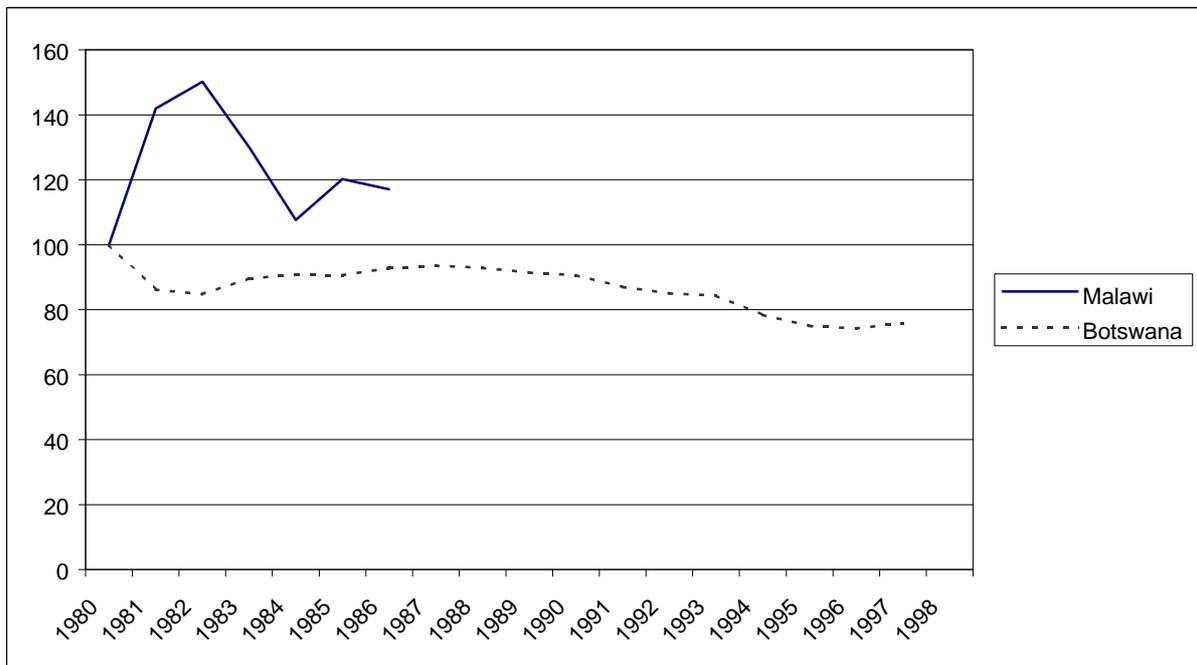
**Figure 2: Changes in the real minimum wage (1980-1998) – North Africa**



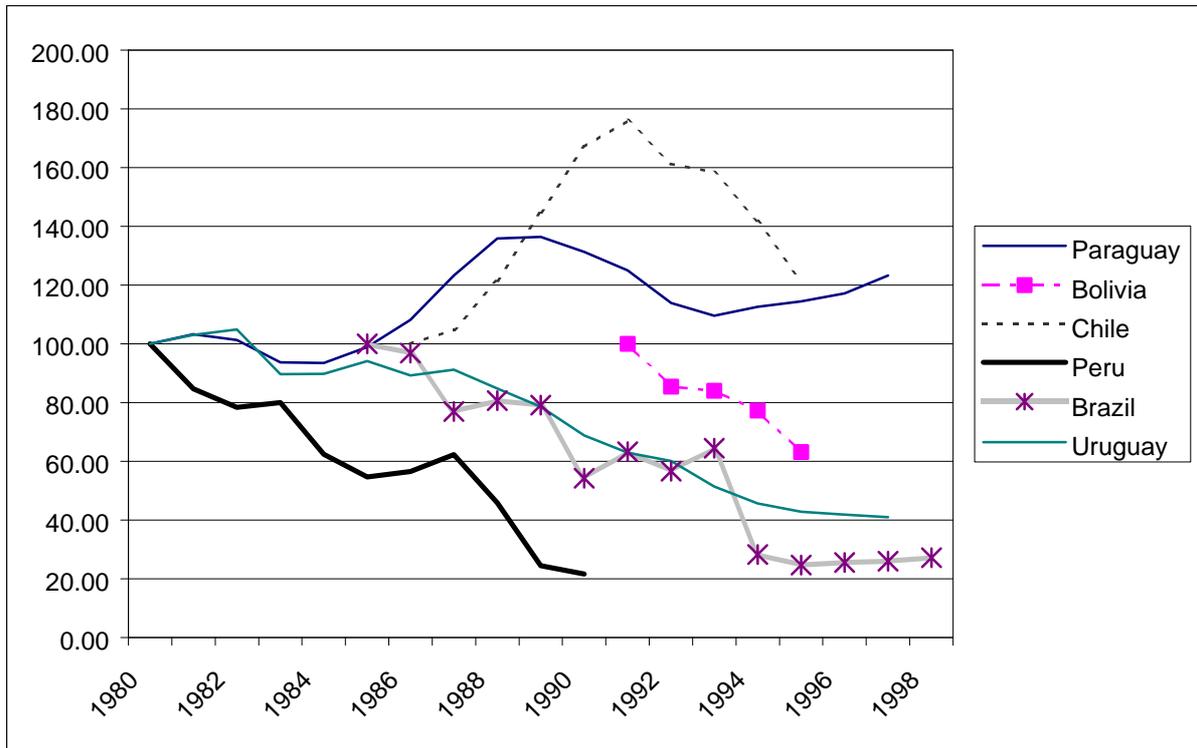
**Figure 3 a: Change in the real minimum wage (1980-1998) – Africa**



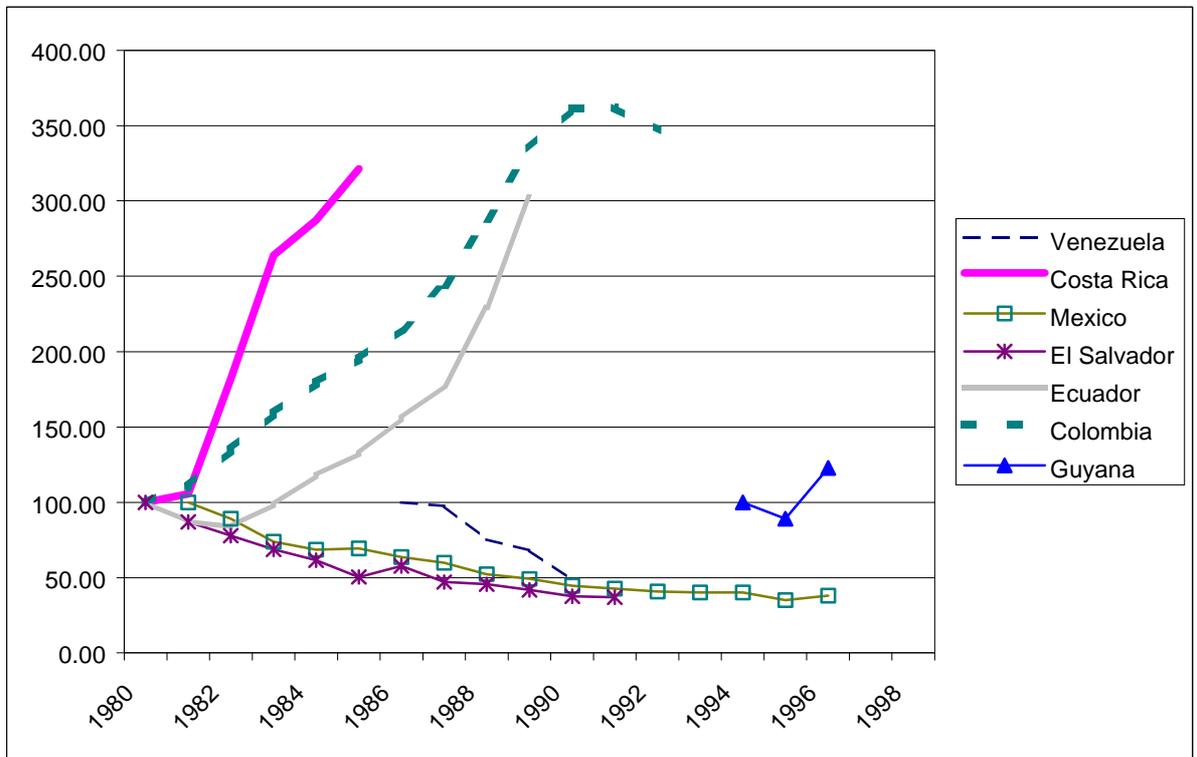
**Figure 3 b: Change in the real minimum wage (1980-1998) – Africa**



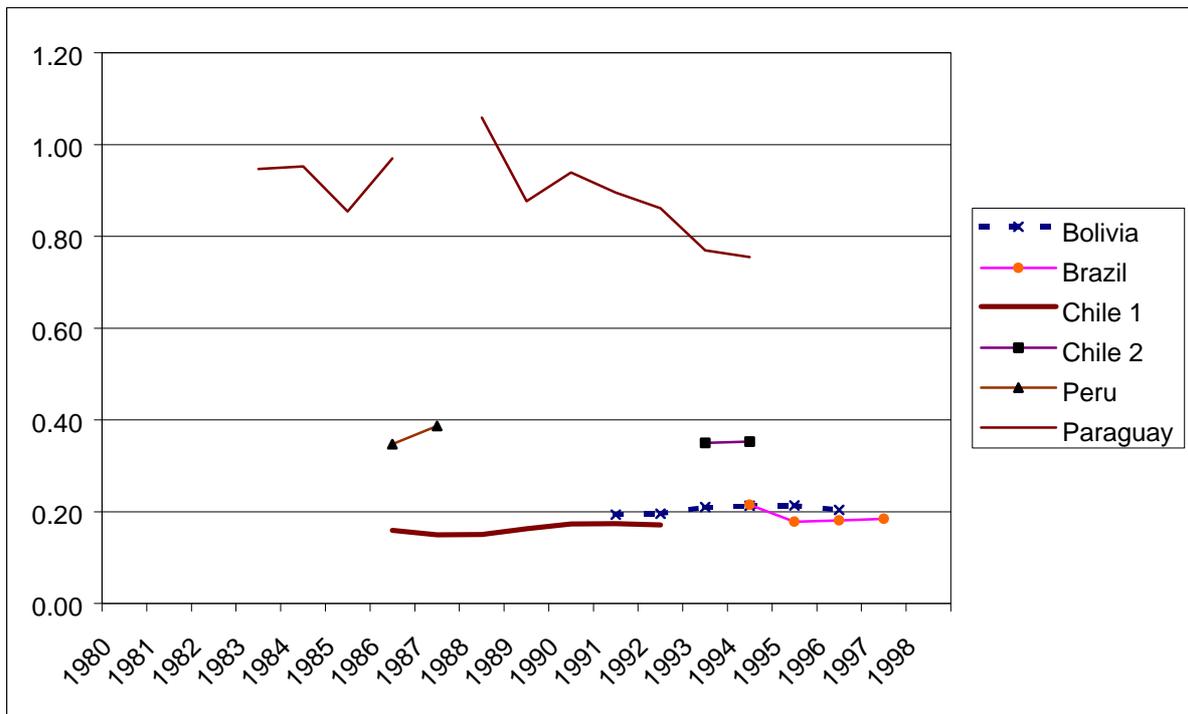
**Figure 4a: Change in the real minimum wage (1980-1998) – Latin America**



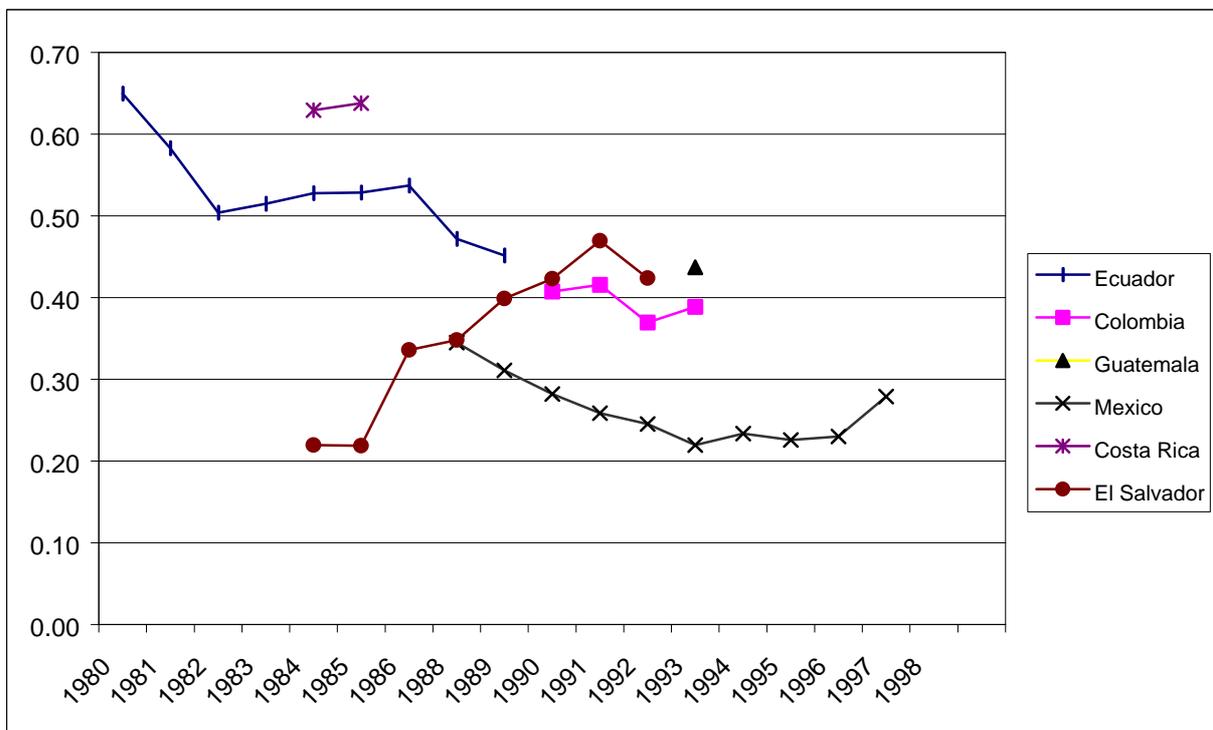
**Figure 4b: Change in the real minimum wage (1980-1998) – Latin America**



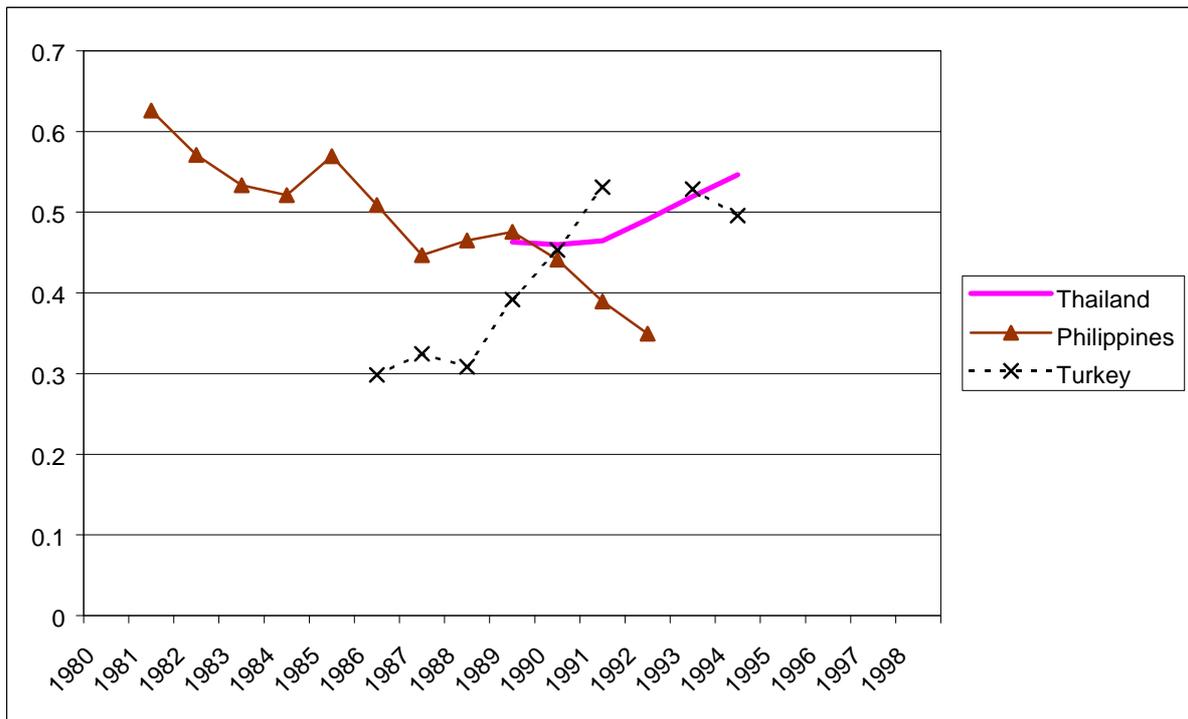
**Figure 5a: Ratio of minimum wage over average wage (1980-1998) - Latin America**



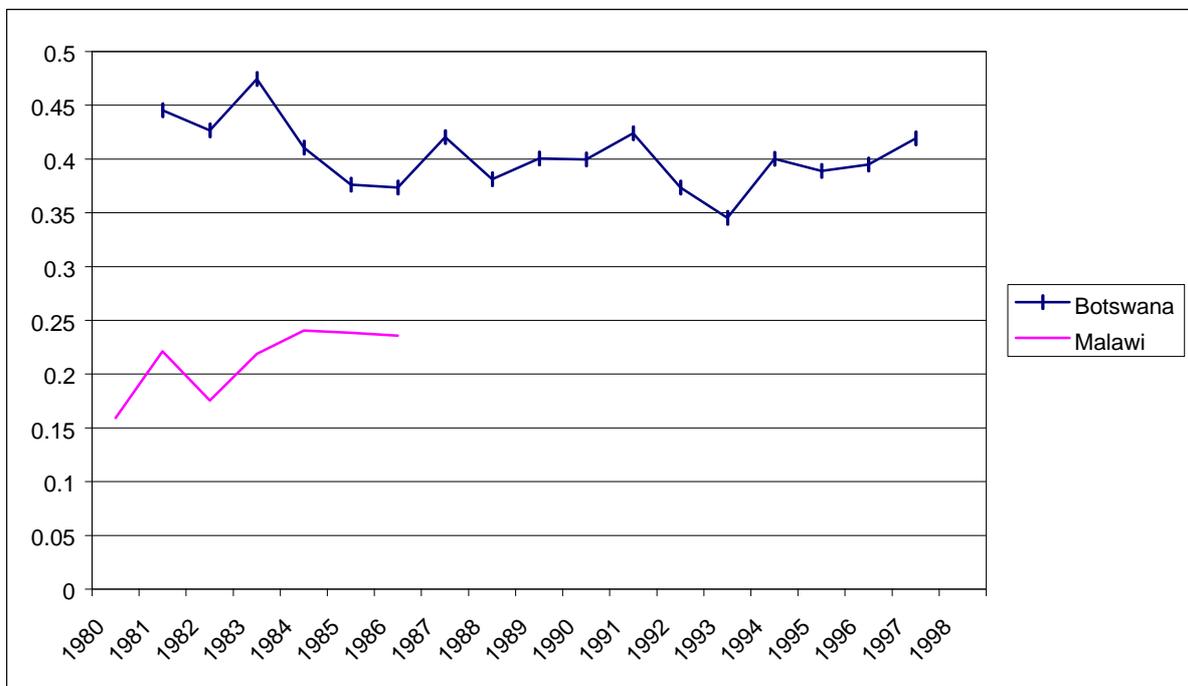
**Figure 5b: Ratio of minimum wage over average wage (1980-1998) - Latin America**



**Figure 6: ratio of minimum wage over average wage (1980-1998) - Asia**



**Figure 7: Ratio of minimum wage over average wage (1980-1998) - Africa**



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