The Price of Labour and Understanding the Causes of Poverty*

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Abstract

This paper provides a review of how questions in labour economics link to the central concerns of development economics in understanding the mechanisms that both create, and perpetuate, poverty in some countries and not others and in some areas within countries. The paper frames this link by asking what determines first the price of labour, then the nature of employment open to labour and finally discusses the links from the price of labour to incomes through the assets owned by the poor. The advent of micro data in developing countries has transformed our knowledge of what needs to be explained. While the price of labour clearly depends on education the links between incomes and education are much weaker than is frequently supposed. The finding from micro data that conditioning on a wide range of observable characteristics of human capital still leaves most of the variation in earnings to be explained suggests the importance of understanding what these other factors might be and how they may interact with human capital. One possibility is that markets are segmented so that individuals with the same skills earn different amounts depending on the sector in which they work. Another possible explanation is that the unobserved characteristics of workers are more important than the observed and that processes of matching and search lead to the outcomes we observe in labour markets. It is argued that these explanations are not mutually exclusive and that different processes may operate across labour markets both within and across countries. The review concludes by outlining outstanding research issues in labour economics whose resolution which represent major new insights into explaining the extraordinarily diverse range of outcomes we observe for the price of labour in poor countries.

Outline

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1 Introduction

Analysis of labour markets in developing countries has not been central to the progress of development economics in the last two decades. If the reader consults a standard textbook on development economics they will find that labour markets are viewed as an example where market imperfections of some kind, possibly a nutritionally based efficiency wage model, may be important but the problems of which are clearly not central to understanding why people in some countries are so poor relative to others. This at first sight is rather odd. *The* reason why people are so poor is that their incomes are very low and in many cases that is because the price of labour is low. Why that is so would seem to be the central question that development economics needs to answer.

Implicitly, of course, development economists are answering that question but they are doing so indirectly. The price of labour is modeled as part of understanding the process of human capital formation in which education plays a central role. Human capital is different from other forms of capital in that it is embodied in its owner. To talk of the price of labour we need to be explicit that we mean labour with a particular endowment of human capital. In the next section we illustrate the first central fact about the price of labour which is that the price is much more closely correlated with where the person lives than with what they know as measured by their education. Why that is so is one of the central research issues in development.

Human capital investment changes the supply of labour of differing skills, what changes the demand? Again development economists rarely pose that question but they are implicitly answering it when they analyse the role of investment in the process of economic growth. The model of economic growth which has come to dominate empirical development economics is due to Solow (1956), although he did not envisage the model would be used for that purpose. The central result of the Solow model is that while investment determines the long run level of income it does not determine the growth rate that is due to "technical progress" which, if it takes a labour augmenting form, will increase the efficiency of labour and thereby its price. What exactly technical progress is and what determines it are subjects on which the model is silent. In its original form the Solow model simply had capital and labour. Its application to poor countries has been due to a very influential paper by Mankiw, Romer and Weil (1992) who introduced two innovations. One was that human capital was explicitly modelled as another factor of production. The second was that they made a distinction between the long run equilibrium and the path to that equilibrium. However MRW followed Solow in making the long run growth rate a function of technical progress. So what their model essentially does is to ensure a marriage between the micro literature where the price of labour is a function of human capital and the macro, where conditioned on human capital, the only other reason why the price of labour increases is the rate of technical progress. Which leads us to our second major research question: what does determine the rate of technical progress and is that rate related to how labour markets operate?

Education and technical progress are two potentially important factors driving the price of labour. That price then provides us to with our first link to the analysis of the determinants of poverty. While in many developing countries the poor only have their labour that is far from universally true. Poor people in rural areas can own land and poor people in urban areas can own physical capital, both can be important sources of non-labour income. The empirical analysis of poverty has been dominated by household survey data which has sought to measure household consumption and poverty measures which are widely cited use a measure of consumption per capita or sometimes per adult equivalent. There are very good reasons for focusing on consumption when one wishes to measure poverty. Consumption is not only more straightforward to measure (although far from easy) but it is a much better measure of long run income that current incomes would be even if they could be measured. While consumption is a good measure of outcomes it depends on incomes and if we are going to understand the causes of poverty and how that

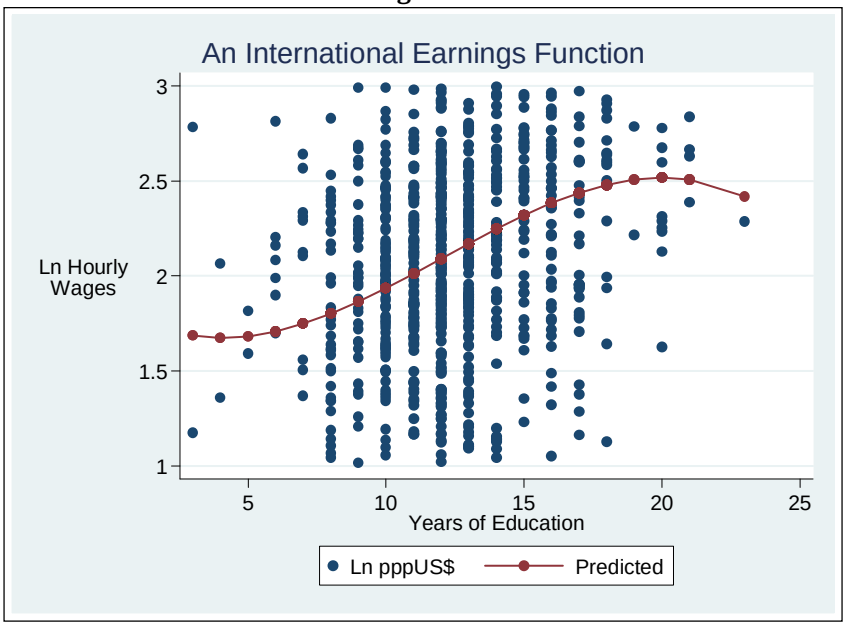
poverty can be most effectively alleviated we need to understand the determinants of the incomes of the poor, of which the price of their labour and the assets they own are both important elements.

In this paper it will be argued that a focus on seeing the development problem from the perspective of labour markets not only offers new insights into some of the existing literature but provides important pointers as to how future research needs to be focused if we are going to advance understanding of how the incomes of poor people can rise rapidly. We show how poverty can be understood through an analysis of the price of labour, the subject of the next section, and how that price is linked to employment outcomes, the subject of section 3. In section 4 we consider unemployment and the role of unions and the public sector in determining the price of labour and the extent and type of employment. In section 5 we discuss how incomes depend on assets and how the returns to both human and physical capital may depend on the scale of enterprises. A final section summarises some of the many questions that remain to be answered in understanding if labour markets are a key factor in understanding why so many people in developing countries remain so poor.

2 The price of labour

The central fact about the price of labour is that its price is much more closely correlated with where the person lives than with what they know. In other words geography matters far more than human capital. Figure I illustrates just how little human capital appears to matter when it comes to explaining wage differences across countries and to a very large extent within countries as well. The data is from Trostel, Walker and Woolley (2002) where the data across countries has been made comparable by converting the local currency into purchasing power parity US$.[1]

Figure 1



[1] There are 26 countries in the Trostel, Walker and Woolley (2002) data set of which 22 are used in Figure 5, they are Australia, Austria, Bulgaria, Canada, Switzerland, Spain, Hungary, Ireland, Israel, Italy, Japan, Latvia, Netherlands, Norway, New Zealand, Philippines, Poland, Slovak Republic, Slovenia, Sweden, and the US. While there is no panel element to the data there are repeated cross sections for most of the countries.

Three features of the data are striking. The first is that the earnings function is clearly non-linear, the shape of this function appears to be convex up to about 15 years of education and concave after that point. The second is that education explains a relatively small share of the income across the individuals in the data. The third is that difference in income across countries, conditioned on education, are extremely large.

That this is so is so much part of everyday experience that it fails to puzzle as it should. Some important parts of economic theory predict that it very definitely should *not* be the case. The simplest version of the Heckschler-Ohlin model of international trade, exposited in any basic economics text book, predicts that trade will entail factor price equalization. The power of this model is its simplicity. Countries have the same technology and differ only in their factor endowments. The basis for the factor price equalization result is that trade in goods acts as a substitute for trade in factors. As the central feature about wages across the world is that factor price equalization does not hold one way of asking why is to ask which of the assumptions underlying the model needs to be relaxed to be able to predict what we do observe, namely large and increasing dispersion of wages across the world. In the H-O model factor prices only equalise if the economies, when entering trade, do not completely specialise in one of the goods. It is an important fact about many poor countries, particularly in Africa, that they specialise in a narrow range of products so that may be part of the reason as to why prices do not converge. However it seems unlikely that this can be the main part of the story as complete specialization is far from universal and the gap between the price of labour across countries is universal.

Recent work points to the potential importance of differences in technology in explaining trade patterns. In one sense in makes sense to say that technology is the same everywhere – knowledge can be bought (and patents stolen or ignored). However applying that knowledge to produce output can lead to radically different levels of output across firms both within and across countries (the possibility of such differences across countries is a key argument of Hall and Jones (1999) in explaining incomes and of Trefler (1995) in explaining trade). If the efficiency with which firms operate differs substantially then those differences in productivity may get reflected in differences in the price of labour and exactly how becomes central to understanding the diversity we observe not only across countries but within them too.

So in thinking about labour markets in any economy the notion of *the* price for labour needs to be treated with great caution. The earnings function, due originally to Mincer (1974), is the standard tool for asking what factors influence the price of labour. The characteristics of labour can usefully be divided between those that capture dimensions of human capital – work experience, education and training – and those that reflect the sector or enterprise type in which employment takes place – its location, sector and size. All of these factors have been shown to be highly correlated with the earnings both of those in wage employment and those in self-employment. However the implication of Figure 1 is that only a rather limited amount of the diversity of earnings can be explained by the observable human characteristics of the individuals. How the role of the other factors, size and sector for example, are to be interpreted matters a lot for understanding how labour gets priced, Mortensen (2005).

We have noted above that one of the possible reasons for the failure of factor price equalization is that firm level efficiency is heterogeneous. If we combine that possibility with the view that labour too is highly heterogeneous and that observable dimensions to those differences explain quite a small part of differences in price then the key to understanding how labour markets operate is how heterogeneous labour matches with heterogeneous firms.

Seeking to understand this process of matching is central to the research agenda in labour economics in developed countries. It is not in developing countries as most employment in such countries does not occur in firms. Does that mean these theories are of limited relevance to such economies? Quite the opposite. If the process by which profitable firm formation fails *is* related to how labour markets operate

then understanding the absence of enough successful firms to generate rises in labour demand and its price – broadly speaking the outcome in Africa for the last half century – is the key to understanding the sources of poverty in those economies.

Before examining these issues in more detail we turn to the question of how employment is determined in poor countries, an issue which has been discussed largely without considering the potential importance of the heterogeneity of the labour that is seeking employment.

3 Employment: Its determinants and structure

3.1 Who is employed?

As Sen (1975) pointed out in his classic study, it is far from clear what it means to be employed in countries where formal labour contracts are the exception rather than the rule. Sen (1975) argues that employment can best be understood by thinking about its various dimensions which include an income, output and a recognition aspect. They are not mutually exclusive and income may be in kind rather than as a monetary reward. In virtually all poor countries employment contracts for labour services are the exception not the rule. So in understanding the determinants of employment we need to understand how output and income are linked when employment is not governed by labour contracts and the implications of a shift to a market structure where they are.

More fundamentally we need to be aware that labour contracts are linked to the scale on which enterprises operate. In small scale farms or firms labour contracts are often unnecessary as de facto there is nothing other than an implicit contact between the worker and the owner. Understanding how those implicit contracts work may be crucial for understanding how incomes are allocated within the household that own the firm or farm. Such contracts underpin the implicit pries of labour that characterise the labour in the household. Such prices while hard to measure are critical for understanding when labour will exit these small firms and farms.

Development by which is meant the process by which incomes rise has been inextricably linked to movements of labour, movements out of rural to urban areas and from small to larger scale enterprises. Why the returns to labour are higher in larger scale enterprises is one of the key research issues in labour economics. The enterprise which has attracted the most attention within development economics has been the firm. Indeed the stylised view of the development process has been the transformation of an economy from one dominated by farms and informal household based labour contracts to one dominated by firms and wage employment.

3.2 The determinants of wage employment

What factors determine wage employment? It is useful to begin with the simplest model of the demand and supply for a given type of labour in Figure 2. We can see that the two factors which determine how wage employment grows are the speed with which the demand curve for labour shifts to the right and the elasticity of the supply of labour. The shape of the labour supply curve has been the focus of the “surplus” labour model which has been very influential in thinking about development issues. The Lewis (1954) model in its simplest form postulates that income growth occurs by employment expanding in a high wage modern sector the speed of which growth is driven by the rate of investment in that sector. In the simplest form of the surplus labour model output does not fall as labour shifts from the traditional (read rural) to the modern (read urban) sector. Sen (1975) provides an overview of the conditions that are required for this to occur.

3.3 The Harris-Todaro model and the Fields extension

Figure 2 sets out a version of a model of labour markets which makes explicit that sectors are linked. On the left hand axis are the wages available in the urban sector, on the right hand side axis incomes to labour in the rural sector. In the original Harris-Todaro (1970) model individuals based their choice of whether to work in the urban or the rural sector by comparing the expected wage in the urban sector with the actual return to labour in the rural sector. In the extension of this model due to Fields (1975) there is

Figure 2 Wages and Employment

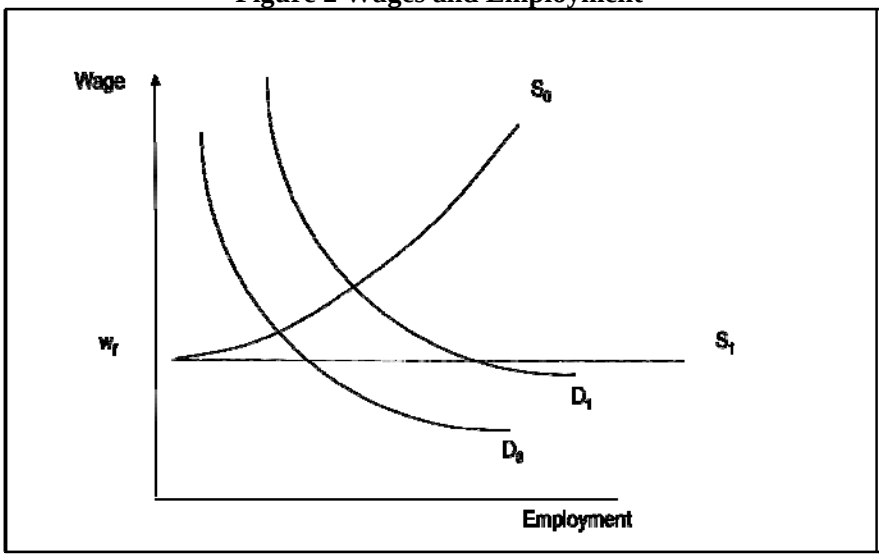
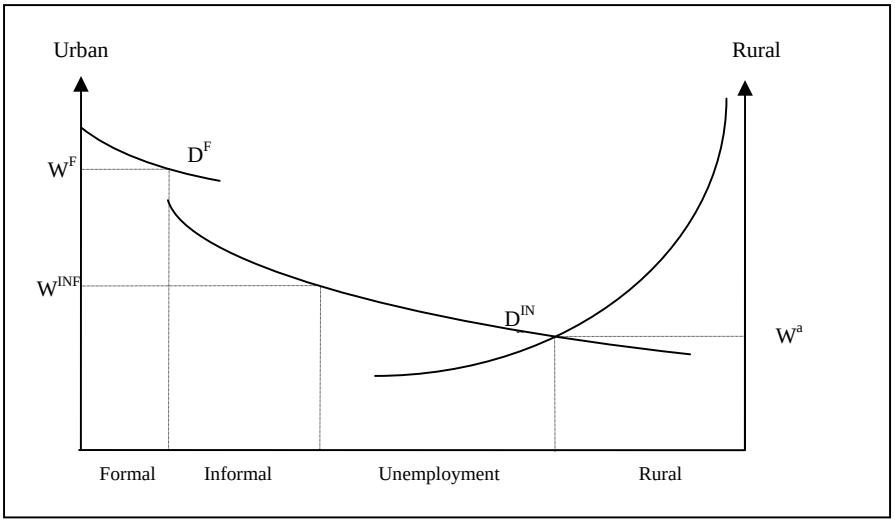


Figure 3 Wages and Employment in a Segmented Labor Market



a “murky” urban sector, more usually termed the informal sector, where access is free and wages low. We have drawn the diagram showing that there are four possible employment outcomes, working in the urban formal or informal sectors, rural employment or open unemployment. The key insight of Harris and Todaro is that unemployment may act as a device which equilibrates wages in the two sectors so that the expected wage of working in the urban sector equals the expected wage in the rural sector. The former is equal to the actual wage (w^f) multiplied by the probability of getting a job which is in turn the number of jobs E^f relative to the number of urban job seekers L^u.

$$E(w^f) = w^f \frac{E^f}{L^u} = w_a \quad (1)$$

Fields (1975) extension of this model was to show that the introduction of the informal sector is to generate wages in the informal sector which bring the predictions of the model much closer to the data. Such labour markets where wages differ across sectors for similarly skilled labour are often termed segmented.

3.4 Segmentation or heterogeneity?

The view that labour markets are segmented has played an important role in their analysis in both developed and developing countries. It is no accident that this focus emerged from comparing rural and urban markets. When seeking to compare incomes across those sectors the gaps looked very large and clearly it appeared something was required to explain why individuals did not all migrate. In an interesting recent study of migration within Tanzania, Beegle et al (forthcoming) find that rural-urban migration led to about a 30 per cent rise in per capita consumption appearing to confirm the crucial role of understanding differences in labour market outcomes related to location. They are careful to point out that that this difference cannot be caused by the migration – if it were why did not all migrate? There must be factors either limiting the gains from migration for some or raising their cost that led a selected group of individuals or households to migrate. It is the role that selection may play in labour market outcomes that is central to distinguishing two fundamentally different views of how labour markets work in developing countries. Is what we observe the result of segmentation or selection determined by unobserved heterogeneity? Not only is this question of importance for which theories are consistent with the data, it is also of great importance for policy makers.

Early tests of the segmented market thesis sought to show that wages for similar types of labour differed across sectors or the size categories of firms or by the profitability of firms. However these tests are problematic for many reasons. Heckman early on pointed out that differences in wage or labour rates across individuals did not necessarily imply segmentation, the Roy (1951) model of occupational sorting implies that treating any sector effect as causal misses the point that the occupation was chosen. Magnac (1991) provides a discussion and one of the first tests. The fact that formal workers earn more than informal ones does not imply that an informal worker who switched to formal employment would earn more. An alternative view to the Harris and Todaro explanation for what we observe is due to Lucas (2004) who developed a model in which the “unemployed” were learning about the application of their skills to urban job opportunities. In such a model migration is not limited by the effects of unemployment on expected wages but by the differing times it takes heterogeneous individuals to learn about and respond to their differing abilities in urban markets.

In summary, the facts are not in dispute. What we observe are large and persistent income differences across sectors and the observable characteristics of the individuals explains relatively little of these differences. The finding that education explains a relatively small share of the distribution of earnings has

led some to argue that the theory is grossly incomplete as an explanation of earnings. Mortensen (2003, p. 1) writes: "Although hundreds if not thousands of empirical studies that estimate so-called human capital wage equations verify that worker characteristics that one could view as indicators of labor productivity are positively related to wages earned, the theory is woefully incomplete in its explanatory power. Observable worker characteristics that are supposed to account for productivity differences typically explain no more than 30 per cent of the variation in compensation across workers in these studies".

The data underlying Figure 1 with which we began provides a context for this argument of Mortensen. The person on the earnings function with fifteen years of education will earn more than twice the one with five year of education, which converts into a Mincerian rate of return of about 8 per cent per annum. We can either be impressed at the value of education – it doubles earnings – or distressed that there is so much variation of earnings for those with identical levels of education which is true both within and across countries.

Moretensen draws attention to the fundamental empirical fact about labour markets which is that there remains substantial heterogeneity across individuals however many controls we put into the equation. In almost all the literature the empirical analysis has been confined to wage employment. In extending it to developing countries that is a rather serious limitation as most employment in such countries is, as we have stressed above, not wage but self-employment. In order to assess how important heterogeneity is within urban Africa Falco, Kerr, Rankin, Sandefur and Teal (2010) report the results of the first panel study of such markets. In both countries while it is clear that larger firms pay more it is far from clear that self-employment with employees is an inferior outcome to most forms of wage employment. It is also clear, and wholly consistent with Mortensen's arguments which relate almost entirely to developed country data, that the overlap across these categories is substantial. Many self-employed worker (even if they have no employees) earn more than wage workers.

How can that be? Why if self-employment pays more, as if often does, does anyone want to be a wage worker? One possible answer is from the Fields's model is that self-employment may be limited by access to capital. What this data for urban Ghana and Tanzania suggests is that that restriction may apply at very low levels of capital.

The question which headed this section was: segmentation or heterogeneity? Without panel data the two apparently opposing views of the labour market cannot be distinguished. Both predict that observable characteristics will fail to explain much of the earning differentials we observe. As more panel data sets become available we will be able to advance understanding as to which view is the more accurate. However it is important to recognize that they are not necessarily alternatives. There may be elements of both in labour markets and the research question we need to focus on is not distinguishing which is explaining the outcomes but their relative importance across different economies. To understand that micro panel data is crucial.

4 Unemployment, unions, the public sector and minimum wages

4.1 Unemployment and Wages

One important finding of micro data sets in poor countries is that rates of unemployment can be lower than those in developed countries. A finding which sometimes prompts those familiar with labour markets in developing countries to think that economist's data are not very useful. How can low unemployment be reconciled with the rather visible fact that in urban areas large numbers of people, particularly among the young, have very little to do? Two distinctions within labour market data are important. One is between being defined as being in the labour force or not. The second is to the extent of income (if any) which can

be identified from the job. Whether or not individuals, particularly women, working in households are identified as in the labour market or not can depend on how the survey is structured. Thus one reason unemployment rates can be low, as conventionally measured, is that many who would take a job if one was available get defined as out of the labour force. Equally, depending on how household workers are defined, they may well be identified as unpaid family workers (but not unemployed). For many developing countries incomes are low not because of unemployment but because the incomes available to labour are so low. Indeed being without a job may be a preferred state if the income that a job yields is sufficiently small. In such an economy, dominated by small scale activity in both rural and urban areas, the problem of poverty is not one of creating jobs, it is understanding the reasons for the low incomes from jobs, the focus of the preceding sections. As we will discuss in the next section one of the key reasons for these low earnings may be the small scale of the enterprise.

While low unemployment is not necessarily a sign of a good labour market outcome for the poor high unemployment is invariably a sign of a bad one. A country where open unemployment and poverty are inextricably linked is South Africa. Unemployment in South Africa, using the broad definition, rose from 31% in 1993 to 42% in 2003. On the 'narrow' definition, where the labour force is defined as the employed plus the searching unemployed, unemployment rose from 17% in 1995 to 32% in 2003. This high and rising level of unemployment reflects in part the failure of either the formal or informal sector to provide new jobs and in part an unprecedented growth in the size of the labour force. Labour force participation rates of women rose by a remarkable 15 percentage points in the eight years between 1995 and 2003. They rose by 5 percentage points for men in that period. (See Kingdom, Sandefur and Teal (2006) for this data in a comparative African context). The unemployed are, on average, substantially worse off than the informally employed – both in terms of income and expenditure and in terms of a range of indicators of well-being (Kingdon and Knight (2004).

South Africa is an extreme case. However it illustrates one of the themes of this review which is that labour market outcomes differ dramatically within developing countries. As South Africa is by far the largest economy in Africa it is important to understand the process by which its high level of unemployment has emerged and their consequences. When does a large self-employment sector absorb increases in the labour supply and when does it result in open unemployment – and why? Given that unemployment does emerge what are its consequences?

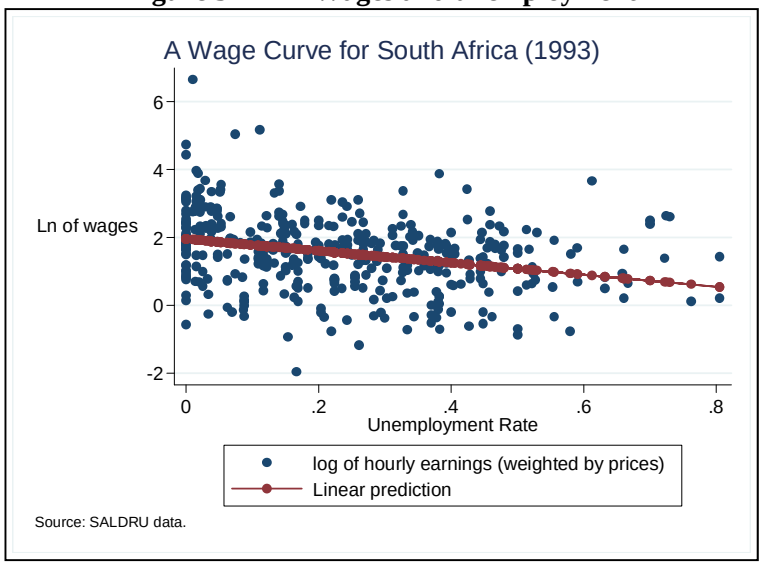
In the Harris Todaro model we outlined above unemployment emerges as a means of ensuring that expected wages across sectors are equalised. It implies of course that high wages go with high unemployment. Is that what the data shows? In fact we observe the opposite. There is a large literature which has regressed wages on local unemployment and almost without exception has found this relationship to be negative. This relationship is termed a "Wage curve" and was noticed and documented by Blanchflower and Oswald (1995). It is one of the most striking empirical regularities in labour economics and on the face of it appears to flatly contradict the Harris-Todaro model. One such example is for South Africa in a paper by Kingdon and Knight (2006) whose results are reproduced in Figure 5. Many economists think this result cannot be causal. Why?

The answer is the power of economic logic. Wages and unemployment cannot be negatively correlated *in equilibrium*. Why? Well why live in an area where there are low wages and a lower probability of getting a job (i.e. higher unemployment), it must make economic sense, in the long run, to move to the area with higher wages and a higher probability of getting a job (i.e. lower unemployment). While you may observe a short-run negative relationship in the data there cannot be such a relationship in the long run.

Such logic is powerful. It both suggests aspects of the market we need to look at if we wish to push the analysis further and questions we need to ask. First how do we measure real wages? Housing and other costs may well vary between low and high unemployment areas so how you measure "real" wages

becomes an important question. Second it suggests what type of data we may need to test some propositions. We may need to observe changes in wages and unemployment within regions or districts over time. This we cannot do with a cross-section.

Figure 5 Wages and unemployment



4.2 Unions

In the context of the homogeneous labour model with which this review began (Section 3) unemployment must be due to wages being set above the market clearing equilibrium. The two institutional forces most often identified as the source of such possible wage premia are unions and the public sector in setting minimum wages. In this section we will review the evidence for the role of unions and in the next section the possible links between unions, the public sector and minimum wages.

So can unions explain labor market segmentation between firms or sectors? While focusing on a different subset of countries, research on this topic has produced very different findings on the size of the union wage premium in Africa. In his analysis of wage misalignment in CFA countries, Rama (2000) concludes that "private sector unions… seemed more instrumental in achieving wage moderation than wage drift. Their members usually had lower wages than similar, non-unionised workers, which probably reflects the 'subordinate' nature of the labor movement." This latter observation is based on a review of research findings measuring union wage premiums in which a number of studies report a *negative* union wage premium for CFA. A country in which the role of unions has been a source of intense controversy in public policy debate is South Africa. Schultz and Mwabu (1998) find for South Africa an average union wage premium for African workers of 47%.[2] In addition, they use a quantile regression approach to examine the effect of unionization on wages for workers in each segment of the income distribution. For African workers at the 10th percentile, unionization is estimated to increase wages by 145%, while at the 90th percentile the effect is only 11%. For white workers the numbers are significantly lower, at 21% and negative 24% respectively. Work undertaken by CSAE updating the Schultz and Mwabu (1998) work suggest that this union premium has risen markedly in the period from 1995 to 1999. Even controlling for

[2] Butcher and Rouse (2003) argue that a much lower figure for the union wage premium among Africans workers – around 20%, obtained by controlling for industry – is the relevant statistic. This places the South African union premium in 1993 at more comparable levels to the U.S. and U.K.

industry the union premium in 1999 was 53.8 per cent, massively higher than that observed in OECD countries. Controlling for firm size, Blunch and Verner (2004) perform a similar analysis for the Ghanaian manufacturing sector and are unable to find a significant wage effect from unionization when looking at workers as a whole, but find a 34% premium at the 10^{th} percentile.

Work to date emphasizes the remarkable divergence that has been observed for the union premium. More evidence is becoming available as a result of the firm surveys carried out in Africa's manufacturing sector. These surveys collected both labor market and firm information. It is thus possible to control for the human capital of the workers and for firm characteristics for similar types of firms over several countries. It may well be thought that the South African economy is an outlier within Africa as far as the importance of the union premium is concerned. Data presented in Kingdon, Sandefur and Teal (2006) uses firm surveys from Ghana, Kenya, Nigeria and Tanzania to provide a comparison with the union premium for South Africa. While controlling for skills dramatically reduces the union effect, the remaining union premia are still very large by international standards. Indeed, premia of 49 and 32% for Ghana and Nigeria respectively are as high or higher than the average union effects found for South Africa, suggesting this latter country may not be so idiosyncratic as is sometimes assumed. Furthermore, the importance of differences across quantiles noted in the work discussed above suggests that these averages may hide important differences that require investigation.

Does this evidence suggest an important role for unions as part of the institutional structure that drives wages across workers with similar levels of human capital? It certainly suggests that unionisation can act in some way in addition to the observable human characteristics of the worker. However without panel data we cannot be sure that unionisation is not associated with the unobservable characteristics. Equally important we cannot be sure that unions do not lead to other changes in firm behaviour. More unionised firms may be more capital intensive and if that capital intensity is in part at least due to unionisation then unions do more than raise wages. The knowledge that unions will be important in larger firms may induce an increase in the skill level firms demand of applicants for jobs in the firm. If that is so then controlling for skill misses one of the mechanisms by which unions impact on wages. In seeking to isolate any union "effect" we also need to be concerned that much unionisation occurs within the public sector.

4.3 The Public Sector and Minimum Wages

So far we have focused on wages and incomes from private sector employment. That might be thought to have omitted not only the most obvious source of segmentation in labour markets in poor countries but a major player in wage employment in poor countries which is the public sector. As a broad generalisation it is true that in poor countries the public sector pays more than the private while in rich countries the public sector pays less. In all countries it is the relatively highly educated who are employed by the public sector. Again as a broad generalisation unions are more powerful in the public sector. A further distinguishing feature of the public sector is that it pays minimum wages.

The public sector appears to offer the opportunity for high pay and low work effort with little if any danger of dismissal. It is also a sector where the minimum wages will be enforced. However a model in which the public sector simply acts to set wage rates above the private market equilibrium may not accurately describe how such labour markets work. The issue to which we have already given prominence is that heterogeneity matters and while the relatively educated may be employed in the public sector all the evidence suggests their skills are highly valued in the private sector. In other words among the relatively highly educated it is not obvious the best outcome is a job in the public sector.

A study which seeks to disentangle some of the possible roles of unionization and the public sector in the determination of wages in South Africa is Kerr (2011). In South Africa poverty is a function of lack of formal sector employment, where wages can exceed those in informal employment by a factor of twelve.

Cross section data shows that observable human capital, while important, fails to explain a very substantial part of this difference. Kerr uses the KwaZulu-Natal Income Dynamics Study (KIDS), a relatively long panel, to investigate two dimensions of earnings - public relative to private sector employment, both wage and self-employment, and unionisation as sources of these differentials. He finds that once unobserved heterogeneity is allowed for there is still a highly significant, 60 per cent, differential for being in the public rather than the private sector while the union premium in the private sector is much smaller, about 15 per cent, and not significantly different from zero. He also finds there is no differential between private regular wage employment and self-employment.

This finding of a substantial premium for being in the public sector is open to at least two interpretations. One, which takes us back to the original Harris-Todaro thinking, is that there is a queue of workers waiting to join the public sector and the premium generates this "waiting" which may take the form of open unemployment or of some "murky" employment. A second interpretation is that while the role of time invariant unobservables has been allowed for in the analysis there remains sorting of different types over time between the public and the private sectors. If only the incompetent survive in the public sector (a view which often finds favour among those in the private sector) it is not that there is a premium for similar types between the private and the public sectors. It is that quite different types of workers have sorted between the two sectors.

To repeat a point that has already been made: these different interpretations are not mutually exclusive. Segmentation, sorting and heterogeneity may all be at play in the outcomes we observe. Given the extent of unemployment in the South African economy, to which we have already referred, it might seem rather obvious that the first of these interpretations – segmentation – is more consistent with the data. However the data we have tells us there is a high level of unemployment it does not tell us that there is substantial movement between the unemployed queue and the public sector. Cross section data does not enable us to distinguish between these alternative hypotheses. Recent work has started to investigate the role of dynamics in labour markets, for example Bosch an Maloney (2010), and offers the opportunity to understand much more fully what underlies the enormous diversity we observe in labour market outcomes.

5 The incomes of the poor

In Section 2 we considered the determinants of the price of labour and in Section 3 how that price linked to employment outcomes. In order to understand the incomes of the poor we need one further dimension which is the assets owned by the poor. Insofar as the poor are asset-less labourers this further dimension is not needed to understand their current income and it may well be the case that such individuals are amongst the poorest of the poor and thus of particular concern in the analysis of poverty outcomes. However assets, even very low levels of assets, are an important source of incomes for the poor and understanding how they are accumulated is a vital aspect of understanding how their incomes can change over their own lifetimes and those of their children. Indeed a focus on the assets owned by the poor returns us to the relative importance of human and physical capital as determinants of incomes.

Most poor people work in small scale enterprises and the income that accrues to their labour depends on the value of the assets. The enterprise may be a farm, it may be a family run business, it may be in trade, it may be some combination of all these, but the common factor across all of them is that the scale is small. Scale will be linked to incomes through two factors. First, small scale implies low levels of assets so incomes will be low unless the value of the assets is high. Second, human capital can be complementary with physical capital and in many cases physical capital requires a substantially larger scale of operation than occurs in rural and self-employed business. Incomes to labour in Africa have been, and remain, very much a function of the scale of the enterprise (see Falco el al (2010)).

However the importance of scale is wider than the link from incomes to assets in small scale enterprises. For wage employees incomes rise with the scale of the enterprise in part due to the fact that larger enterprises employ more skilled labour and in part because there is a size effect on wages, Söderbom and Teal (2004) and Söderbom et al (2005). The relative importance of the human capital component of wages and the role of firm characteristics are central empirical issues in understanding why wages differ as much as they do and why wages *can be* so much higher than non-wage sources of income in poor countries.

Numerous reasons have been advanced as to why size and wages are related, Oi and Idson (1999). One possibility is that certain sectors or firms have more desirable characteristics than others in which case wages will reflect an element of compensating differentials. Another model suggests that workers may be harder to monitor in some firms or occupations in which case the wages may be part of the inducement mechanism to work harder. This and other versions of the efficiency wage argument all suggest reasons why firms will choose to pay more than the reservation wage of the workers, for example Stiglitz (1974). In contrast to models which focus on why firms will wish to offer higher wages are theories which predict more profitable firms will pay more as workers capture some of the rents from higher profits Teal (1996).

One empirical finding which surprised researchers when measuring returns to education was that once one sought to allow for the possible bias in the OLS the instrumental variable results suggested these estimates were downward biased. A second empirical "surprise" in the measurement of the return to education was that, at least in the US, the return to education rose when the levels of education rose. A finding clearly at variance with any simple model of the demand and supply of skills by which increasing skills would reduce their price. The key facts were set out in a paper by Acemoglu (1999) which also sought to explain them:

"Between 1979 and 1987, the average weekly wages of college graduates with one to five years of experience increased by 30 percent relative to the average weekly earnings of comparable high-school graduates [sources given in the paper] .. after controlling for education and experience, the differential between the ninetieth and the tenth percentile wages stood at 118 percent in 1988 compared to 92 percent in 1970 .. the rise in inequality over this period was not only due to wage increase for highly paid workers. Real wages of high-school graduates with one to five years of experience, for example, fell by 20 percent from 1979 to 1987. Meanwhile the unemployment rates of all education groups have increased. In 1970 the unemployment rate for civilian males between the ages of 25 and 64 with less than four years of high school was 4 per cent. For those with high-school and college degrees, the same numbers were 2.4 per cent and 1.1 percent. Averaged between 1992 and 1994 the unemployment rates for these three groups were respectively 13.9 percent, 6 percent and 3.2 percent, approximately three times higher than the rates during the 1970s." Acemoglu (1999)

So how can these facts be explained? Acemoglu builds a model which suggests that when the supply of skills increases the incentives of firms to create more skilled jobs also increase. Why? The intuition of the model is that if both the productivity differential between skilled and unskilled workers and the share of the workforce that is skilled is sufficiently low then firms will not have an incentive to create high quality jobs. However as both dimensions of skills increase firms may find in more profitable to create higher quality jobs and the economy will flip to a new equilibrium with two classes of firm. In other words in moving between equilibria the wages of skilled workers will rise, those of unskilled workers will fall and unemployment will increase.

This model is of relevance to any attempt to understand what expanding the supply of skilled labour *may* do. The interest of the Acemoglu model from the perspective of developing countries is that it highlights possibilities where the labour market does not clear by means of a Walrasian auctioneer or the kind of equilibrium unemployment envisaged by the Harris-Todaro model. In such models workers are paid their

marginal products (in the case of the Harris-Todaro model these are expectations over uncertain outcomes) which differ simply as a function of their observed and unobserved skills. The Acemoglu model points to the possibility that changing the supply of skills may alter the structure of jobs available for the skilled. There are several areas where this model may be of importance for developing countries. One is in India where the rapid expansion of, and apparent oversupply of, higher educated labour appears to have laid the foundation for the growth of a service export sector. A second is in sub-Saharan Africa where the rapid expansion of education at all levels, including the tertiary, appears to be leading to the formation of a small but rapidly growing high skill self-employment sector, Teal (2011). A third is in South America where there is evidence of increasing convexity of the earnings function – a rise in the return to education for the relatively highly educated – which appears to resemble in many respects what is observed in the US market for tertiary educated labour.

An Acemoglu type model points to the increasing importance of education as the asset that will raise incomes but there is a problem for a policy of investing in education as a means of reducing poverty. In these models, and in the data we have, the returns to education occur at the post secondary level. In a magisterial survey of the implications of this for understanding the role of investing in education Heckman, Lochner and Todd (2009) point out that most of what has been assumed about the interpretation of the Mincerian returns to education needs to be revised. In particular if the underlying earnings function is convex, it implies the highest returns are to those with the highest level. Why then do we observe most students exit long before they achieve the highest returns? One possible way of answering that question to build a model in which students have to trade off the benefits, which are long term, with the costs, of continuing in education, which are current, see Burger (2011) for an application of this framework to South Africa. Work on the implications of convexity in earnings has only just begun and promises to revolutionise current views of how investing in education impacts on growth and poverty.

6 Research on labour markets: New data and new theory

This review began by acknowledging that research on labour markets has not been central to thinking about development economics over the last two decades. Three interlocked elements have dominated the evolution of thinking on development economics since its birth as a sub-discipline within economics after the Second World War. The first has been the respective roles of the state (or economic planning) relative to the market in the design of economic policy. The second has been the primacy of analysis at a macro or a micro level. The third has been the interaction of data, theory and policy. The common factor across all these elements has been the concern, and interest, of both national governments and increasingly international organisations in policies that will promote development.

The argument of this review has been that in understanding how poor economies grow and who benefits from that growth within those economies it is the third of these elements – the interaction between data, theory and policy - that is crucial for progress. Why a concern with labour markets needs to be central is simply that poverty is the result either of low prices for the assets the poor own or a low level of those assets (or both). So one way of summarising a possible research agenda for labour in development economics is to pose the question with which we began – why is the price of labour so low is some countries relative to others – and how can an interaction between data and theory inform better policy choices.

The key role of the increase in knowledge and the human capital which has built that knowledge in explaining how sustained rises in per capita income have been possible since the nineteenth century is not in doubt. What is in doubt is how education impacts on this process. The macro evidence suggests that the link between investment in human capital and incomes is much less direct than one might at first believe (see Pritchett (2001 and 2006)). The micro evidence suggests that the links are far more complex than

early interpretations of Mincerian earnings functions as showing that education explains earnings might have suggested. If the underlying earnings function is convex then much education will be acquired as it is the entry point to the next level. The greater the convexity and the smaller the proportion able to continue to higher levels then the greater the possibility that large investments in education will yield little income for those who are unable to continue to higher levels. Clearly central to any research agenda that wishes to understand both continuing poverty and rising inequality associated with access to post-secondary education is to understand why the macro links are so weak and what does determine the underlying shape of the earnings function.

If the answer to the question we have posed – why is the price of labour so low in so many countries – were simply its level of skills then both the research for labour economics and indeed the policy problem posed for development economics would both be rather straight forward. Regrettably the data suggests that education does not play a major role in explaining the distribution of incomes in countries. What does thus defines a central part of the research agenda. In this review several possible lines of research have been suggested some (or all) of which may be part of the answer to that question.

The finding of a wage curve within such a wide range of economies poses as many questions as it answers. What is the model that underlies this downwards sloping relationship? How can this outcome be an equilibrium, why faced with lower wages and higher unemployment do workers not move? If it is equilibrium of a model in which firms pay efficiency wages and this generates the unemployment observed how can we discriminate between models in a way which enables us to identify the underlying relationships in the data? We know that the wages firms pay vary with a wide range of their characteristics. Does this reflect bargaining based on the heterogeneity of firms matched with the heterogeneity of their employees? If so then high wage firms are simply those with highly productive workers and the long line at the factory gate is simply misinformed as to their productivity. Or is it the case that high wage firms are such because firms have chosen to invest in the capital stock that demand the skills, in which case the line at the factory gate results from the investment policies of the firm as well as possible differences in underlying productivity across the employed and those not in wage employment. In summary, how wage jobs form, how they are rewarded and how they link to the outside income option of the non-wage employed are all questions we need answered if we are to understand why in so many poor countries wage opportunities are so limited.

The focus of the wage curve literature has been on the links between wages and unemployment. Of greater importance in most poor countries is the link between wage and self-employment. Among those with low levels of education the choice is not between a wage job in a large firm and unemployment it is a choice between wage employment in small firms and self-employment. Among those with very low levels of education the choice is between work in rural areas and work in the small scale urban sector. What determines these choices and their outcomes is the answer to what determines the extent and geographical location of poverty. Is it that their skills need to be updated? A large and persistent lobby for vocational based education has argued that this is the case (see Kahyarara and Teal (2008) for some evidence on this from Tanzania). Is it that firm formation and/or growth limits the number of urban jobs in large scale enterprise where the returns from higher levels of education can be realised? That is an obvious possibility about which we have almost no evidence.

The main concerns of labour economics, as reflected in this review, have been on supply side factors. The question was raised in the introduction as to whether this was where to look for understanding the price of labour. If long run growth depends on some form of labour augmenting technical progress then understanding that is going to be an important part of knowing what changes the price of labour. Recent work offers insights into just how important labour quality may be in determining firm productivity. Bloom, Mahajan, McKenzie and Roberts (20110) find that when Indian firms adopted very basic management practices “they obtained massive improvements in productivity and profitability” (page

620). They found this was particularly the case for larger (100+ employees) enterprises. One possible interpretation of this result is that the human capital intensive skills, allied with size, are critical for firm success.

If it were to turn out that technical progress depended on how well labour matched with firms able to innovate rapidly then how labour markets operate will turn out to be central to understanding the sources of poverty and the mechanisms by which it has been removed in some countries but not in so many.

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