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World Development Report

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Development Economics
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Background Paper for the 1990 World Development Report

Poverty, Policy, and Industrialization

Lessons from the Distant Past

Ben Polak
and
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Poverty, Policy, and Industrialization: Lessons from the Distant Past*

by
Ben Polak
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I. THINKING ABOUT POVERTY AND INDUSTRIALIZATION

Does industrialization increase or decrease poverty? There has been much debate among Third World analysts on this question of late. Debate on the same question attracted even more attention as the First Industrial Revolution unfolded in Britain in the early 19th century, and it hasn't diminished much since. Pessimists say it increased poverty while optimists say it didn't. An outside observer might well be puzzled that there is a debate at all. After all, what's the counterfactual? Are the pessimists really arguing that things would have been better for the poor without an industrial revolution? Can any pessimist really believe that slower growth is better for the poor than faster growth? While the answers might seem obvious at first blush, it turns out that the pessimists deserve our careful attention. What we want to show in this essay is that even if the answers are "no" in both cases, just how much poverty is eradicated by industrialization depends very much on the form that industialization takes. The better we understand that historical moral, the better will we be equipped to understand how contemporary economic growth in the Third World can aid or impede its progress with poverty eradication.

There are two questions that this essay confronts. First, what happened to the share in poverty, and to their living standards, during 19th century industrial revolutions? Second, why did poverty statistics behave the way they did? The first question is easier, and we start there.

A recent book by Cynthia Taft Morris and Irma Adelman (1988) makes it clear to us that qualitative evidence simply will not do. They assert with what seems to us unsupported confidence that poverty was worse in those countries where industrialization and growth was more rapid -- as in Britain and Belgium -- than in countries where industrialization and growth was slower

-- as in Switzerland or France. They base their assertions on qualitative evidence. Comparative assessments of poverty are difficult enough in the 1980s to expect them to be any better a century ago. Adelman and Morris may turn out to be right, but quantitative comparative conclusions are hasty on the basis of the qualitative evidence now available.

The facts are that there is as yet no data which makes it possible to compare the numbers in poverty across nations in the 19th century, let alone the living standards of the poor. Thus, this essay will limit its coverage to changes in poverty over time where comparative judgments are more tractable. While other countries are more poorly documented, we are able to get some impression of trends in and composition of 19th century British and American poverty by exploiting official statistics on poor relief. What little we do know about other countries does not appear to conflict with British and American experience. Use of official statistics on poor relief is fraught with difficulties, some of which will be discussed below in Section III, but, in combination with the famous poverty surveys done by Booth, Rowntree, and others, they at least give us some basis on which to assess poverty. Unfortunately, it is very difficult to identify changes in the composition of the poor by this means, but we can get static impressions of who was poor at various points in time. Indeed, it is more useful to look at how certain groups were affected by industrialization than to search for some elusive statistics documenting overall poverty.

The second question is harder. How might industrialization and modern economic growth diminish poverty? On the face of it, the answer seems obvious. If by growth we mean an increase in per capita income, and if there is no change in the distribution of that income, then by definition the incomes of the poor will rise along with everyone else, and the rate of escape from poverty will exhibit the same performance. This "trickle down" theorem

suggests that it is not possible to discuss the relation between growth and poverty without discussing its effect on distribution. Has the rise in inequality been so severe in the past that the percent in poverty could have risen and the average living standards among the poor diminished? Such results would have required severe inequality trends indeed, but it is important to understand that the forces driving inequality are similar to the forces driving poverty statistics. While rising inequality may not necessarily imply increasing poverty, it may imply a slow rate of escape from poverty. Thus, Section II will dwell at length on 19th century experience with inequality among the industrializing NICs of that time. This is a story about relatives, that is, the performance of the poor relative to the rich. Central to that story is understanding the forces of supply and demand that kept the wages of the unskilled poor low. At the end of that section, we will also explore what happened to the living standards of the poor. This is a story about absolutes, that is, the rate of poverty reduction. It appears that the same forces of supply and demand which drove inequality also conditioned the rate of poverty eradication.

It should also be stressed that modern economic growth can affect poverty in both direct and indirect ways. The direct influence has already been stated: if incomes of the poor rise along with the average, then poverty can be said to have diminished. The indirect influence takes account of the fact that much of the poverty which we observe in both the 19th century and today occurs at predictable stages in an individual's life cycle. The incidence of poverty is greatest among those who are not full income earners like the aged, or among those subject to crisis like the sick or widowed. It is a mistake to infer that higher incomes have no indirect impact on such individuals who are cut off from the market economy. After all, even the working poor who receive higher incomes should be better able to save more for crises and old age. The

growth and wider access of financial institutions for saving, credit, and insurance should help even poor individuals spread their lifetime incomes over their lifetime needs. Furthermore, a richer society can be expected to be willing and able to transfer more resources to those in need whether by state intervention, by private charity, or by intra-family transfers. However, neither of these indirect potential connections between higher incomes and poverty were, in fact, manifested in ways that helped the poor very much in the 19th century. Access to formal capital market institutions did not always develop rapidly enough to replace disappearing "traditional" means of income support for the poor. And during early industrial revolutions in the 19th century laissez faire policies often served to reduce or even remove state interventions which had previously transfered resources to the poor. We shall have more to say about this in Section IV.

There are four ways that poverty might actually increase during early industrial revolutions, all of which will get some attention in this essay. First, the living standards of the poor may fall and inequality rise in response to technological events driving industrial revolutions. Second, the cost of living facing the poor may rise more dramatically for exactly the same reasons, eroding their living standards in ways which conventional income statistics may fail to capture. Third, early industrial revolutions may undermine both the earning potential of secondary unskilled workers and the secondary earning sources of primary unskilled workers. Fourth, modern economic growth may, in Amartya Sen's language, erode traditional entitlements which serve as safety nets in pre-industrial societies. Let us dwell a moment on each of these.

The most important way that early industrialization might raise poverty, or at least inhibit its eradication, is if rising inequality is associated with early industrialization. We have a name for this hypothesis -- the

Kuznets Curve. Section II will show that there is abundant evidence supporting a 19th century upswing of a Kuznets Curve, at least in Britain and America. Furthermore, inequality seems to have been driven by technological forces which were unskilled labor saving, a view stressed by Marx and explored at length by development economists in the 1960s and 1970s. The derived demand for unskilled labor simply does not share equally in the boom for other primary inputs -- like land, skills, and capital -- during early industrial revolutions. And if the working poor suffer, those in extreme poverty will suffer even more. There appear to have been two related forces which produced the unskilled labor saving. First, those sectors which enjoyed rapid technological advance and output growth were capital and skill intensive driving up the derived demand for both, while the unskilled poor lagged behind or were in some cases actually displaced. Second, physical capital and skills were complements so that rapid accumulation augmented the demand for skills far more than for unskilled labor. In short, unskilled labor saving technological progress tended to retard the growth in unskilled labor demand, inequality rose, and the poor failed to share in economic progress.

There is a tendency in writing about 19th century poverty, as well as contemporary Third World poverty, to associate low-wage jobs with poverty, offering the empty conclusion that low pay had a deleterious effect on the poor (Treble, 1979). It is surely a mistake to blame the existence of poverty on the existence of low-wage jobs in what were then called the "sweated trades" or casual employment in what we now call the informal service sector. After all, how would the poor have been affected if such low-wage jobs were unavailable? Instead, we should try to isolate the forces of demand and supply for unskilled labor which resulted in such low wages, as well as those forces which made access to the sweated trades or casual service sector employment the only source of jobs for many of the working poor.

There is a second, and directly related, way that early industrial revolutions can inhibit poverty eradication. Technical change during early industrial revolutions in the 19th century was slowest in those activities which produced goods and services which figured most prominantly in the budgets of the poor. The two most important of these were food and urban housing. The terms of trade between farm and nonfarm goods rose across most of the 19th century, so that food became relatively expensive, driving up the cost of living of the poor relative to higher income classes for whom the food expenditure share was much smaller. The source of this long run trend was not the Heckscher-Ohlin theorem, so popular in trade theory, but rather unbalanced productivty advance favoring nonfarm sectors combined with inelastic land supplies. Land scarcity and technological events mattered most. Furthermore, the relative cost of urban housing rose by even more. This was again partly due to land scarcity in the booming cities, but also due to the fact that the building industry exhibited one of the slowest rates of technological advance. Rents soared, and the poor were most significantly affected since expenditure on even their blighted and modest housing were so much larger as a share of their family budgets than among the higher income classes. And high and rising rents encouraged the poor to search for ever-cheaper dwellings, encouraging them to crowd into lower quality housing which augmented mortality, morbidity, and their ability to work. We do not measure such environmental deterioration very well, but it seems to have been manifested by a decline in nutritional status and physical well-being during the industrial revolution (Fogel, 1989). While the intra-urban transport revolution did gradually increase the distances over which people could travel to work, making it increasingly possible to escape the worst slums by moving to the more benign periphery, it did not keep pace with the pressure of urbanization. Thus, the poor tended to concentrate in the environmentally deprived central core of 19th century

cities rather than at the periphery as is true in Third World squatter settlements today. This plus government neglect of urban infrastructure served to heighten the notorious crowding and slum living of the early 19th century urban poor, a quality of urban life even lower than that observed for the worst Third World cities. In short, the same forces that tend to produce income inequality during early industrial revolutions also tend to raise the relative cost of living of the poor -- industrialization in the 19th century cheapened the goods that the poor produced relative to the goods that the poor consumed.

Despite the importance of these forces in creating greater inequality during 19th century industrial revolutions, they have not been stressed by most pessimists in the debate over poverty and industrialization. Before moving on to the other forces which may have contributed to slow progress with poverty eradication early in the industrial revolution, it is worth reiterating that beneath the working poor were the extreme poor who were represented disproportionately by the old, the sick, large families, and female-headed households. How do those who argue that growth increased poverty view its impact on these specific groups? We need some answers, even though historians often ignore them while focusing instead on the working poor. It can be argued, for example, that it was the old which were most vulnerable when a sector was perturbed by technical change, by the development of new markets, or by some price shock. The reason is that they had already invested in human capital that was specific to that sector, like the oft-cited handloom weavers in early 19th century Britain. It was also harder for the old to migrate since they had invested in their location and had a shorter future life span over which to recoup the cost of the move.

This essay will, therefore, consider more generally how technical change affected the demand for old labor, child labor, and female labor. We are not

able to report definitive historical findings on this crucial question yet, but a key consideration will be the fate of the cottage or domestic industries. These industries were and are very important to the economic status of the poor. Domestic industries were and are intensive in their use of female, child, and old labor and hence important income sources for vulnerable groups. They were often low skill (and especially low strength), and they could be and are undertaken alongside child care in the home where the pace of production was self-regulated. These industries were often an important secondary income source for the family that took on extra importance during agricultural slack seasons, during periods of low market employment, and during periods of food crisis. The rise of the factory and the development of integrated commodity markets tended to eliminate these cottage industries. That fact is much stressed by pessimists in the standard of living debate, and Section III will dwell on it at length.

The other chief way in which early industrialization might create increased distress among the poor is if there is an erosion of traditional means of support and Sen-like entitlements. Although modernization theorists stress different forces, most of them make much of the long lag between the destruction of traditional support systems and their replacement by modern transfer mechanisms (Sen, 1981): for example, the erosion of the village "moral economy" (Scott, 1976); the breakup of the extended family and the rise of "individualization" (MacFarlane, 1978); and the increased importance of migration generating "child default" on parental investment (Sunderson and David, 1986; Williamson, 1986). Within these entitlement-erosion themes are a number of important claims, some of which will be discussed in Section IV. Lindert (1989) argues that significant transfer systems were not introduced in the NICs of the past until the 20th century, partly in response to the fact that economic conditions of the poor began to catch up with the rest of the

economy on the downside of the Kuznets Curve, thus increasing their political voice. Others argue the contrary, and that government intervention was extensive -- although local -- even in pre-industrial societies. This debate should tell us much about attitudes towards poverty and how their evolution might be expected in the Third World if they obey the same historical laws.

There is, of course, the role of policy to consider. Section IV will have quite a bit to say about this issue, in particular 19th century experience with what Michael Lipton (1976) calls the urban bias, and what Theodore Schultz (1964) and others since have called the squeeze agriculture policy. These and other policies matter, and most 19th century industrializers appear to have adopted policies surprisingly similar to the ones which the Third World has adopted, policies that poverty-oriented economists have consistently criticized.

Having suggested the main ways in which early industrialization might increase poverty, or at least inhibit its eradication, a central issue should be emphasized. It is not economic growth per se that is sometimes said to make the poor poorer, but rather the processes and policies that are associated with various growth regimes that matter. These processes may themselves be regarded as facilitating industrialization or as its joint product. Having said as much, it becomes clear that the kind of arguments sometimes put foward by the optimists are simply not relevant to the claims put foward by the pessimists. For example, in a recent survey for the World Bank Gary Fields (1989) compares changes in the poverty share between Third World countries exhibiting rapid growth and those exhibiting stagnation. He concludes tentatively that the poor did better during periods of rapid growth. Similarly, the Council of Economic Advisors "discovered" in 1964 that the share in poverty declined by more in periods of rapid American growth. But no one ever suggested that the poor do better when an economy is stagnating than

when it is booming -- given the economic structure and policy environment. Surely rapid growth is better than slow growth in eradicating poverty, given the economic structure and policy environment. Rather, the issue is how changes in that structure and policy environment can affect the poor. When looking at slumps in the short run, or at growth retardation in the medium term, a more relevant question to ask is whether industrial revolutions result in a greater collapse in income and employment among the poor, and whether it results in their diminished capacity to survive those episodes.

This is an ambitious set of questions to ask of 19th century experience with industrial revolutions. And despite the attention which historians have paid to them since Britain started the First Industrial Revolution, history yields the answers only with great reluctance. Yet, a survey of what we do know may still help place contemporary Third World debate in perspective. What, then, does 19th century experience tell us about the connection between poverty, policy, and industrialization?

II. INEQUALITY DURING PAST INDUSTRIAL REVOLUTIONS

Before we can talk about poverty, we need to understand what history tells us about inequality. It's important to understand first the industrial revolutionary forces driving inequality because they illustarte best the determinants of poverty eradication, namely the demand for and supply of unskilled labor. Having done so, we shall be better equipped to return to the poverty theme in Section III.

The Kuznets Curve: Contemporary Cross-Sections Once More

More than three decades ago, Simon Kuznets (1955) noted that income inequality seemed to have declined in the industrialized nations across the mid-20th century, and ventured the guess that it had risen earlier just as the critics of capitalism had asserted. While Kuznets was drawing on limited historical evidence, others rose to his challenge by pursuing the more abundant cross-sectional evidence. Felix Paukert (1973), Hollis Chenery and his World Bank team (1974), Montek Ahluwalia (1976; 1980), and Edmar Bacha (1979), all thought they saw contemporary cross-section evidence supporting the Kuznets Curve, namely that income inequality first rose and then declined with development.

The Kuznets Curve is illustrated in Figure 1, based on Ahluwalia's World Bank sample. A quadratic fits this 60-country sample fairly well, where the inequality statistic is simply the income share of the top 20%. The underlying data can and have been criticized. Indeed, some have argued that the data is much too fragile to resolve the debate. But whatever your position on the issue of data quality, two morals leap out from Figure 1. First, the more robust portion of the Kuznets Curve lies to the right: income inequality falls

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create a path dependent egalitarian regime throughout the East Asian industrial revolution.

It's hard to say much more about Figure 1. The literature doesn't tell us an awful lot about why a Kuznets Curve should appear in the data in the first place. And the data doesn't tell us anything about the dynamic which produces the Kuznets Curve in such cross-section data, nor why some countries are likely to depart from the Curve. It turns out that history helps out on both counts.

Were Today's Industrialized Countries Always Egalitarian?

Figure 1 documents that the industrialized countries of today are far more egalitarian than most NICs of today. Were they always so egalitarian? They were not. In fact, inequality in Europe and America was at its zenith on the eve of World War I, and the extent of that inequality was very similar to the most inegalitarian NICs of today, like Brazil. It is difficult today to find any developing country where the top 5% receive almost 50% of the income or where the top 1% hold 70% of the wealth. Perhaps only such "bad Latins" as contemporary Peru, Panama, and Brazil can claim that dubious distinction today, but they also describe Britain in the late 19th century. To illustrate the point, Figure 2 plots two contemporary NICs, Korea -- a "virtuous Asian" with a fairly egalitarian distribution, and Brazil -- a "bad Latin" with a very inegalitarian distribution. Four NICs around World War I -- the United Kingdom (1913), Prussia (1913), Denmark (1908), and the Netherlands (1919) -- all tend to fall in between these bounds, but they look much more like Brazil in the upper ranges in the size distribution. In short, today's industrialized countries had inequality levels on the eve of World War I similar to the most inegalitarian of today's NICs.

The Downside of the Kuznets Curve and 20th Century Inequality Histories

Europe and America were not always so egalitarian, it seems. So, when did the egalitarian leveling take place? We have far better evidence to answer that question today than Kuznets had in 1955.

What Arthur Burns saw in America as a "revolutionary leveling" after 1929 apparently was shared by most of Europe, whose experience is documented in Figure 3. What is so striking about Figure 3 is the extraordinary similarity in each national downswing of the Kuznets Curve across the 20th century. The one possible exception is Germany in the interwar decades, but still the conformity is striking. Nor is the historical pattern in Figure 3 unique. When these 20th century time series are pooled with the contemporary cross-section in Figure 1, neither the levels nor the trends show sigificantly different patterns than those already summarized in Figure 1. Thus, 20th century history agrees with the international cross-sections and with Kuznets' original conjecture: there is a clear trend towards equality in the later stages of development.

A Word About Market Forces Versus the Fisc

The inequality we have been talking about thus far is pre-fisc, that is, income before the effects of taxes, transfers, or government purchases of goods and services. There are three reasons for the choice. First, and certainly most pragmatic, comparative assessments are far easier to make since the literature is dominated by pre-fisc estimates. Second, while well-being at any point in time is certainly better gauged by post-fisc income, it is not at all clear that inequality trends can be explained by changes in the "fisc".

Indeed, there is considerable evidence, recently reviewed by Peter Lindert (1989), that fiscal redistribution explains only a small part of the leveling in post-fisc incomes among the industrialized countries across the 20th century. The same is true of today's international cross-sections: the contrast in post-fisc Gini coefficients between egalitarian Britain and inegalitarian Brazil owes much less to fiscal redistribution and far more to pre-fisc inequalities as they are generated in the marketplace. Third, the economist is presented with a greater challenge in explaining pre-fisc inequality since it is the complex outcome of a whole range of macroeconomic forces which influence factor rewards, forces which the economist is better equipped to analyze. Even so, a case can be made that the same market forces which produced the pre-fisc leveling of incomes in industrialized countries across the 20th century also produced a more activist government fiscal intervention, serving only to reinforce the egalitarian trends set in motion by market forces. We shall return to this theme in Section IV where we discuss changing attitudes toward poverty, but the key moral here is that pre-fisc factor market forces have been at the heart of 20th century egalitarian trends among the industrialized countries. What was true of the 20th century was even more true of 19th century trends in inequality and poverty. To understand both, we need to understand those pre-fisc factor market forces.

The Upswing of the Kuznets Curve and 19th Century Inequality Histories

It appears that we can document a 20th century egalitarian leveling for a large number of currently industrialized countries. Did they also undergo a rise in inequality when industrializing in the 19th century? Here the evidence is thinner, but at least we have detailed evidence on two countries that matter, Britain in the Old World, and America in the New World. Let's

start with the Britain and the First Industrial Revolution.

While the evidence is still being hotly debated, what we do have suggests that British capitalism did breed inequality, and the inequality drift seems to have been a product of the forces associated with the industrial revolution. The rise in inequality can be dated from around 1760, and it was manifested throughout the full income distribution: the income shares at the top rose, the shares at the bottom fell, real wages of the unskilled were relatively stable, the numbers in poverty were slow to fall, the premium on skills increased, and the earnings distribution widened. British inequality seems to have reached a peak somewhere around the 1860s or shortly thereafter. While not spectacular, the egalitarian leveling up to World War I was universal: as Figure 3 suggests, the income shares at the top fell; in addition, the shares at the bottom rose, the relative pay of the unskilled improved, the numbers in poverty fell sharply, the premium on skills declined, and the earnings distribution narrowed. A sample of the data which supports this interpretation can be found in Table 1.

Before leaving this evidence, one important finding must be stressed. Most of the changes in British (and American, as we shall see) inequality across the 19th century were driven by changes in factor rewards -- the wages of skilled labor relative to the wages of unskilled labor, rents on land relative to the wages of unskilled labor, the returns to capital relative to the wages of unskilled labor -- and much less by changes in the distribution of factor ownership. Changes in earnings inequality are explained primarily by changes in the structure of pay rather than by employment shifts from occupations with low skill content to those with high. While skills may well have become less equally distributed in the early 19th century, it was the inflation in the premium on those skills, a relative scarcity of those skills, and a relative glut of unskilled labor that did most of the work in augmenting

earnings inequality and slowing down the rate of poverty eradication before the 1860s. Similarly, the increase in the top 5 percent's share in national income across the late 18th and early 19th centuries had little to do with increased concentration of landed wealth -- although such increases may well have taken place -- but rather with the behavior of rents themselves. Changes in the distribution of wealth induced by accumulation served to reinforce the influence of changes in factor rewards on the distribution of income, but it was initial changes in factor rewards that seemed to matter in setting the Kuznets Curve in motion. This turns out to be an important moral to remember when we start to seach for explanations of historical experience with both inequality and poverty.

So much for the Old World. What about the New? Did America avoid the rising inquality which appears to have beset Britain? Apparently not. Income and wealth inequality rose sharply with the onset of modern economic growth early in the 19th century. Egalitarian trends only appear with the advent of mature capitalist development in the 20th century. In the interim, America generated seven decades of pronounced inequality not unlike that experienced by Britain, or, as we have seen, by contemporary Brazil. Thus, in spite of abundant land, alleged equality of opportunity, democratic institutions, and a 19th century reputation as an ideal poor man's country, America did not avoid the economic inequality commonly believed by some to be associated with capitalist development.

Table 2 offers a sample of the kind of evidence which supports this conclusion, where benchmark estimates of wealth concentration are summarized over the past two centuries. Other evidence on income and earnings reinforces those trends -- like the share of income received by the unskilled and the rate of poverty reduction, the latter to be discussed in Section IV.

In short, there seems to be sufficient evidence to at least tentatively

confirm Kuznets' hypothesis for Britain and America. So, why did these two countries undergo sharply rising inequality during their industrial revolutions while others did not, and why did all of them undergo a leveling in late stages of development? And what do the answers tell us about the impact of industrial revolutions on the poor and on the rate of escape from poverty?

Theorizing about the Kuznets Curve: Focus on Factor Markets

Can inequality trends be explained without reference to changes in the real wage of the unskilled relative to other factor returns? Were this possible, then the nasty complexity of modeling the entire macroeconomic structure could be avoided. Unfortunately, most inequality movements appear to stem from changes in the relative rates of factor returns, so the macromodeling cannot be finessed. Classical economists knew this well enough so that their dynamic models of growth and distribution focused on factor incomes accruing to labor, land, and capital. Modern human capital theory implies the same, with focus on the structure of pay by skill.

Kuznets himself wondered if his Curve might not be the result of shifts in employment alone, and Sherman Robinson (1976) gave the idea some empirical plausibility. Stripped to its essentials, the argument goes something like this. Imagine a traditional society characterized by perfect equality, with everyone earning 5 pesos in agriculture, close to subsistence, and below some poverty line. Let some modernizing influence introduce an urban job paid at 10 pesos, which is first enjoyed by just one lucky individual who escapes rural poverty. These jobs then diffuse through society until everyone earns the 10 pesos. Any conventional inequality measure will rise from the initial perfect equality and then return to it later, tracing out the Kuznets Curve; any

measure of poverty incidence will fall -- first at slow rates, then accelerating to fast rates, and finally settling down again to slow rates; and any measure of the living standards of the poor will exhibit stability throughout.

While simple and elegant, there are limits to any inequality explanation which relies solely on this kind of diffusion process. It is not true that inequality histories are driven solely or even primarily by such forces. Pay advantages themselves tend first to rise and then to fall. Indeed, over half the observed rise in aggregate earnings inequality in 19th century Britain stemmed from movements in these pay ratios by skill, including the earnings gap between farm and city.

The pattern of rising and falling pay ratios is sufficiently widespread, and so closely parallels overall inequality trends, that it suggests that any theory of the Kuznets Curve must explain why the real wage of the unskilled lags behind, and thus why the rate of escape from poverty can be so slow, during early stages of industrialization, and why the real wage catches up in later stages, and thus why the rate of poverty eradication accelerates.

What about the distribution of non-human wealth? In principle, one might imagine that changes in the distribution of wealth might be an independent determinant of changes in income inequality. Although changes in wealth distribution associated with slave emancipation, land reform, civil war, and nationalization may be loosely associated with the stresses of modern economic growth, and while they may help account for idiosyncratic experience in some national histories, they cannot offer any coherent explanation of the Kuznets Curve. It seems more appropriate to view long run trends in the distribution of wealth either as a result of previous changes in the distribution of income or as a simultaneous outcome, since those forces driving returns to assets surely also govern the aggregate value and distribution of wealth.

We are led, then, back to factor markets, and to labor markets in particular. So it is that economic historians and development economists have pondered at length how labor markets work in economies shocked by the disequilibrium of Industrial Revolutions and Demographic Transitions. And so it is that Jan Tinbergen (1975) has focused on a model of labor markets to account for the 20th century leveling of income and earnings in the industrialized economies. What follows is in that tradition. So, how might factor demand and supply forces have operated in the past to produce inequality on the upswing of the Kuznets Curve and to make poverty such a stubborn problem? When and where have those forces been modified, and have they created industrialization histories of less inequality and more dramatic reductions in poverty?

Labor Saving Technological Change

A potentially powerful factor-demand force behind inequality and poverty experience is the degree to which technological progress tends to economize on some factors of production while favoring the use of others. A bias toward unskilled-labor saving can widen income gaps by worsening job prospects and wages for the unskilled while bidding up the returns to skills, capital, and perhaps even land. This idea is hardly novel, but the evidence on long-run, systematic movements in the factor demand bias needs to be established, as well as its correlation with the Kuznets Curve. We do know that American growth in the 19th century was heavily unskilled-labor saving, and the same seems to have been true of Britain prior to 1860. Most would argue that the same has been true of the Third World since 1950. But is there any evidence suggesting that these high rates of unskilled-labor saving abate as nations approach maturity? Third World experience is, of course, too short to offer

any guidance, but Britain's experience with productivity slowdown around the turn of the century appears to be consistent with sharp retardation, if not reversal, in the rate of unskilled-labor saving. But America offers the most comprehensive evidence by far. For the economy as a whole, each of several studies has found a strong aggregate labor-saving bias from about the start of this century to 1929, followed by a switch to either neutrality or a labor-using bias up to the Korean War. None of these studies actually distinguished between unskilled and skilled labor, but it may be surmized that any era of labor saving was likely to have been especially unskilled-labor saving. Thus, the downswing of the Kuznets Curve which starts in the late 19th century in Britain and after 1929 in America may have been due to a switch in the bias of aggregate technological progress from unskilled labor saving which preceded those dates.

It is important at this point to pause and remind ourselves what we mean by aggregate labor saving. Aggregate labor saving can appear in the historical data for any of the following three reasons: (i) differences in the rate of technological advance between industries of different labor intensities; (ii) shifts in industrial output mix away from labor-intensive sectors induced by shifts in product demand or factor supply forces; and (iii) the introduction of labor-saving technologies within industries. The last of these -- labor saving at the industry level -- was a favorite econometric exercise a decade or two ago, but nothing in that literature establishes any historical pattern, Kuznetsian or otherwise. The first and second sources appear to be more promising.

It is certainly true that one of the stylized facts of development is the shift in output and employment mix as economies undergo the transition from an agrarian base to advanced industrialization. Thus, the rate at which agriculture declines as a share of aggregate output or employment begins

slowly, then quickens, reaching a peak as the Industrial Revolution hits full stride, and then drops off as the transformation is completed at late stages of development. To the extent that agriculture is relatively unskilled-labor intensive, high and rising aggregate unskilled-labor saving early in the Industrial Revolution should be followed by a fall in the rate of aggregate unskilled-labor saving late in the development process. If these derived labor demand forces are strong enough, the Kuznets Curve is assured.

However, unbalanced output growth such as this cannot be viewed as an exogenous force driving inequality if endogenous domestic demand forces -- like Engel Effects -- account for it. How much of the spectacular shift in output mix in the Third World today or in Britain and America in the last century can be explained by trade and domestic policies of "urban bias" which which favor capital/skill-intensive activities, and how much by favorable world market conditions in those sectors? How much of the shift can be explained by the rapid rate of technological progress outside of unskilled labor intensive agriculture or more unskilled labor intensive services -- what we are calling unbalanced productivity advance? The key point here is simply that the sectoral shift itself is not an independent influence on inequality unless it can be shown that it comes from such exogenous forces. Furthermore, we then have to show that these exogenous forces are themselves correlated with the Kuznets Curve. One of these with some promise is the urban bias, a topic of Section IV. A second is unbalanced productivity advance, a central force driving unskilled labor saving and thus experience with inequality and poverty.

An extensive literature has sketched the sectoral patterns of total factor productivity growth over the last 150 years in America. The secular movements do indeed trace out a 19th century drift away from labor-using sectors, largely because productivity advance was rapid in capital and

skill-intensive manufacturing and transportation, while large and labor-intensive agriculture lagged far behind. Early in this century the same labor-saving imbalance between sectors continued up to World War I and across the 1920s. Between 1929 and 1953, the sectoral pattern was much more balanced, with agriculture in particular catching up with the rest of the economy. To summarize, the rise and fall in the rate of labor saving associated with unbalanced productivity advance seems to correlate well with the American Kuznets Curve.

A similar pattern seems to have characterized British experience. Between 1780 and 1860, technological progress was very unbalanced in favor of the capital/skills-intensive sectors, shifting factor demand away from unskilled labor. After 1860, the sectoral pattern of British productivity advance was far more balanced in its factor-demand effects. Like 20th century America, late 19th century Britain's farm sector switched from a large, unskilled labor-intensive activity with relatively slow productivity advance to a small sector with average capital intensity and productivity performance. And once again, the timing of the switch to more balanced productivity advance coincided with a historic peak in the Kuznets Curve.

"Classic" patterns of unbalanced productivity advance like those revealed by American and British history hold promise in helping account for the Kuznets Curve when it appears. As long as product demands are elastic -- as in the open economy case, then rapid productivity advance off the farm will pull resources from agricluture. Since traditional agriculture uses unskilled labor in large doses and since modern urban activities use unskilled labor in smaller doses, the demand for unskilled labor softens relative to capital and skills, unskilled wages lag behind, the bottom of the income distribution suffers, and history traces out the upswing of the Kuznets Curve. American and British history also suggest that evidence of the Kuznets Curve is likely to

be most striking for those countries whose technological history has been most unbalanced, and for whom agriculture has lagged most behind, ceteris paribus. The Kuznets Curve is most likely to be absent in those countries who have been most successful in avoiding unbalanced productivity advance. One such example seems to be Japan. There is no clear drift in the rate of labor-saving implied by the intersectoral pattern of Japanese productivity advance from the 1880s to the 1930s. Japan also seems to have avoided the Kuznets Curve over the past century.

Immigration, Demographic Transitions, and Labor Supplies

It has become commonplace in the historical literature to associate the demographic transition with labor surplus, poverty, and inequality. The argument develops along the following lines: Modern economic growth begins on a traditional agrarian base characterized by elastic labor supplies, better known as surplus unskilled labor. Accelerating rates of capital accumulation thus fail to generate rising wages among the unskilled until the surplus labor pool is exhausted. This turning point can be postponed for some time if either the forces of demographic transition or foreign immigration continually replenish the initial pool. Under such conditions stable real wages among the unskilled poor could coincide with rising per capita incomes, tending to create more inequality.

Increased fertility and immigration associated with the industrial revolution should foster income inequality in two ways. First, it gluts labor markets with young and unskilled new entrants, creating massive changes in the age distribution of the population and the labor force. Such changes in the age distribution can create inequality even if factor prices and the structure of incomes are unaffected, as Simon Kuznets (1976), Samuel Morley (1981), and

others have noted. That is, there will be more at the bottom of the distribution than before. Second, the glut lowers the relative wage of unskilled poor, while raising the returns to skills and conventional capital, thus fostering inequality. It also follows that those countries which have been beset with external immigrations during their industrial revolutions are more likely to exhibit rising inequality (like the New World). Similarly, those countries which underwent significant external emigration during their industrial revolutions are more likely to have avoided rising inequality (like the Old World). In addition, those countries which underwent more dramatic demographic transitions are far more likely to trace out unambiguous Kuznets Curves in their historical data than those who did not (like France and Japan).

Human Capital Accumulation and Skills Deepening

As early as 1848, John Stuart Mill predicted that an acceleration in skills acquistion would eventually erase the skills scarcity and resulting earnings inequality generated by the industrial revolution. The poor would gain in two ways: those who got the skills would move to better jobs, and those who didn't would find their unskilled services scarcer and thus earning higher wages. That proposition has remained untested for more than a century, and it is clearly relevant to understanding the Kuznets Curve. After all, it wasn't until the 1960s that Gary Becker (1962; 1964) and Theodore Schultz (1961; 1963) started us quantifying human capital formation. Since then, there has been a veritable flood of empirical work documenting labor force quality trends, including some recent estimates for both 19th century America and Britain.

These estimates suggest that the rate of skills deepening (that is, the

rise in skills per member of the labor force) correlates well with skills scarcity, earnings inequality, and income inequality. The rate of skills deepening was exceedingly low in Britain during her early phase of rising wage inequality; the pace quickened around mid-century, about a decade after Mills' observation; and the rate of skills deepening reached impressive levels in the era following the educational reforms of the 1870s, coinciding with the first drop down Britain's Kuznets Curve. The American correlation looks similar, though the turning points come later, well into the 20th century, both for the rate of skills deepening and for the leveling of incomes. The historical evidence from these two countries at least suggests a slow equilbrating process, whereby one generation's skilled-wage gap promotes the next generation's faster accumulation of skills. The institutional and economic arrangements which make the human capital accumulation response rapid in some countries (like East Asia) and slower in others (like Latin America) clearly will play a role in determining whether a Kuznets Curve will be more pronounced in some countries compared with others.

What About Capital Accumulation?

So far, we haven't said a word about capital accumulation. The reason is that the influence is more complex, although we used to think it was straightfoward. Back in simpler days when we thought in terms of capital and labor only, and given that the elasticity of substitution between the two was less than one, then it followed that accumulation raised labor's share and diminished inequality. Reality is more complex, especially when we think in terms of three factors -- labor, skills, and capital, and when we also worry about the source of capital accumulation.

If our interest were confined to the earnings distribution and the

skilled wage ratio, it would be a simple matter to predict the effects of capital accumulation. History tells us that capital tends to be complementary with skills and a substitute for unskilled labor, so a rise in the capital stock should augment the skilled-wage ratio and earnings inequality. Furthermore, an increase in the capital stock implies an increase in the relative size of the capital goods sector, the more so are capital goods produced at home. History tells us that the capital goods sector tends to use skilled labor intensively, so the demand for skills is driven up and we have another force tending to raise the skilled-wage ratio and earnings inequality.

The impact of capital accumulation on inequality becomes more difficult to identify when our interest shifts from earnings inequality to income inequality. Suppose an outward shift in the supply of savings -- due to a rise in domestic thrift or to an inflow of foreign investment -- creates capital deepening. The augmented supply of capital will raise the skilled-wage ratio and earnings inequality for the reasons already offered, but it is also likely to lower the return to capital. Since capital's return is diminished while earnings inequality is augmented, the impact on overall income inequality is ambiguous. Suppose instead that the source of the capital deepening is an improvement in capital goods supply, driven by unbalanced productivity improvements favoring the capital goods sector, and revealed by a decline in the relative price of capital goods. In this case, income inequality is clearly increased. Not only should wage stretching and increased earnings inequality take place, but the rate of return to capital should also rise as should capital's share. Finally, suppose it is some world price shock or some technological event which raises the relative demand for capital. Once again, income inequality is assured.

Obviously, the impact of capital accumulation on inequality is complex, and it may vary from country to country. If it is driven by a secular boom in

investment demand or by a exogenous decline in the relative price of investment goods, inequality is assured. If instead it is driven by an exogenous rise in domestic savings or foreign capital inflows, it isn't assured. This distinction may offer yet another reason why some countries conform to the Kuznets Curve while others don't.

What Explains the Kuznets Curve? Lessons from History

So, we have three or four plausible forces that might account for the presence (or the absence) of the Kuznets Curve. To repeat: labor saving technological change -- a force that Marx favored; labor supply -- a force which Malthus favored; human capital accumulation -- a force which Mill favored; and conventional capital accumulation -- although this can hardly be viewed as an independent force if it is being driven by the first two. Plausibility is one thing, however. Fact is another. How are we to discriminate between these plausible explanations? History has a nasty way of generating multicollinearity: industrial revolutions are associated with increased labor saving, quickening rates of labor force growth, rising accumulation rates, and anti-agrarian policies. How do you sort one out from the other?

Our view of inequality history, particularly in Britain and America, leads us to concentrate on fundamental trends in factor demands and supplies associated with the industrial revolution. To quantify these influences, computable general equilibrium (CGE) models have been used. When these CGEs are applied to American and British inequality history, what do we find?

The surge in American inequality before the Civil War seems to have been due primarily to the extraordinary rates of capital accumulation obtained during those decades, rates that were generated by a secular boom in

investment demand itself pushed by rapid rates of labor saving technological advance. Rapid accumulation favored skilled workers towards the middle of the distribution and capitalists towards the top of the distribution in two ways. First, a greater proportion of unskilled labor (a substitute for capital) than skilled labor (a complement to capital) was replaced by mechanization. Second, accumulation helped raise income per capita, and this rise, through Engel's Law, caused agriculture to contract as a share in national income, a process that released relatively large doses of unskilled labor. Unbalanced technological progress centered on manufacturing and transport favored the expansion of capital and skill intensive sectors, contributing to the rise in inequality on two counts: directly by favoring the modern sectors where unskilled labor was used the least, and indirectly by inducing an accumulation response with the results already described.

After the Civil War and as the late 19th century progressed, capital accumulation became a little less rapid, and productivity growth a bit less unbalanced. These changes explain about half of the observed shift from sharply rising inequality on the upswing of the Kuznets Curve, to relative stability in those inequality trends along the Kuznets Curve's high American plateau. Demographic events explain much of the remainder. Skills per man hour appear to have grown significantly in the late 19th century after having remained stable for much of the antebellum period -- in part due to the earlier rise in foreign immigration rates. The apparent cause of this acceleration in skills-deepening and skills-widening was the decline in the share of the labor force consisting of new, unskilled immigrants. The resulting rise in the rate of skills-deepening helped prevent a continuation of the surge in earnings and income inequality started earlier in the century.

The first decade of the 20th century brought a resumption of wage stretching, and rising earnings and income inequality. This time the

explanation clearly rested on a resumption of more unbalanced rates of technological progress. Across the 1910s and 1920s, American inequality first compressed during the war and then bounced right back in the immediate postwar period, leaving no net change. If the only kind of growth from 1909 to 1929 had been growth in factor supplies, the era of income leveling would have been ushered in two decades earlier. This follows since immigration and fertility were making much smaller contributions to labor force growth, especially during World War I and after the immigratio restrictions took effect in the mid-1920s. The slower labor force growth and the faster rate of skills-deepening served to compress the pay structure and level earnings distributions. But in fact there was no net compression in the pay structure. Why? Because technological progress was again very unbalanced, and it centered on sectors which used a lot of skills, some capital, but little unskilled labor.

When the downswing of the American Kuznets Curve finally arrived following 1929, it was the result of the coincidence of technological and demographic forces. Total factor productivity growth was more evenly balanced across sectors than in any other era since 1840, accelerating in agriculture and some services. This change accounted for about half of the leveling between 1929 and the Korean War. Most of the remainder is explained by demographic forces: by the great fertility decline and by shutting out immigrants from the Old World. The rise in government expenditures seems to have made only a very modest contribution.

It now appears that America and Britain both experienced the Kuznets Curve of first rising, then falling, inequality. Nonetheless, the timing of the Kuznets Curve differed. As we have seen, British inequality seems to have peaked in the middle of the 19th century while American inequality remained at a plateau from the Civil War to the 1920s before starting its downswing. Why

does the leveling start a half-century sooner in Britain? In any case, were the forces driving the British Kuznets Curve across the 19th century quantitatively similar to those which we have already documented for America? It seems so.

As with America, changes in the rate of unbalanced productivity advance and changes in the rate of skills deepening are two critical forces driving the British Kuznets Curve across the 19th century. The pay gaps and earnings inequality set in motion by unbalanced productivity advance -- favoring relatively rapid expansion in the derived demand for skills, served to offer great and increasing incentive to investment in human capital much like John Stuart Mill alleged in 1848. However, the slow and inelastic supply response in skills per worker -- explained in part by income constraints facing the poor unskilled and in part by the modest intervention by the state, both of which limited the ability of the poor to invest in human capital -- made it possible for inequality to persist for many decades before the demand-side disequilibrium began to be rectified in the late 19th century and earnings inequality began to settle down.

One of the reasons why Britain underwent a leveling on the downside of the Kuznets Curve before America did appears to be because Britain suffered a late 19th century and early 20th century productivity slowdown while America did not. A second explanation can be found on the factor-supply side: Britain never had to absorb increasing unskilled labor supplies from abroad -- although she had her share of Irish early in the century -- so that she could accelerate the rate of skills deepening earlier than could America.

To summarize, no unambiguous theory of the Kuznets Curve emerges from this look at history. After all, no inevitable law of economic motion has emerged from history either. First, the evidence which documents inequality among industrializing nations then and now is sufficiently fragile to insure

that the debate started by Marx and Engels early in the last century will continue well into the next. Second, there is more than one path to development. Representing the Old World and the New, Britain and America both seem to have satisfied the economic and demographic conditions which can generate a Kuznets Curve. These were: a rise and fall in labor saving technological change, the source of which was a rise and fall in what we have called unbalanced productivity advance centered on gaps between industry and agriculture; a rise and fall in the rate of labor force growth, the source of which was the demographic transition and foreign immigration; a very long lag in the rate of skills or human capital deepening; and a rise and fall in the rate of accumulation induced in large part by the same labor-saving (capital-using) forces. Not all countries satisfied these conditions: Japan, for example, seems to have missed most of the first three and thus seems to have missed the Kuznets Curve as well.

What about the Expenditure Side?

As Section I pointed out, while the incomes of the poor lagged behind on the upswing of the Kuznets Curve in Britain and America, they also suffered on the expenditure side since the living costs they faced rose sharply in relative price. That is, the same forces that caused the wages of the poor to lag behind also tended to raise the poor's living costs -- industrialization in the 19th century cheapened the goods that the poor produced relative to the goods that the poor consumed. Unbalanced productivity advance, inelastic land supplies, and an anti-poor regime of state intervention were the critical forces that generated that result. The relative price of food and rents are crucial to the story since both loomed so large in the budgets of the poor, especially the urban poor. Both increased during periods of rising income

inequality. Technological advance was fast in industry, while slow in agriculture and urban housing, thus increasing the relative price of the two wage goods most important to the poor. These technological forces were reinforced by inelastic land supplies which were, of course, more important inputs to agriculture and urban housing. To make matters even worse for the poor, anti-agriculture domestic price policies served to raise the cost of food even more, while inadequate investment in city social overhead, especially in poor urban districts, served to lower living standards of the poor as well. These policies will be explored at length in Section IV.

First, let us confront the assertion that food and rents were the key wage goods of the poor in the 19th century. We focus throughout on the urban poor since, after all, they were increasing in importance as the century progressed. Table 3 supplies some evidence from both England and America. Among Massachsetts urban poor in 1875, the food and rent share combined was 89.5%, 68.9% for food and 20.6% for rent. Similar shares were typical of London's poor in the early 19th century. Finally, the city of Northampton supplies rent shares by income class at the end of the 19th century: the pattern across income classes is very steep, falling from 44% among the extreme poor to only 8% among the richest. Clearly, food and rents were the key wage goods among the poor.

Second, what happened to prices of these key wage goods? We offer three pieces of evidence to confirm the view that the relative price of these wage goods was rising during the 19th century. Table 4 documents the ratio of living costs between the unskilled poor and the rich in America's eastern cities over the first two decades of rapid industrialization, 1820-1839. The ratio rises by about 10% over the two decades, driven by the terms of trade forces outlined above. A strategic wage good, food, was rising in relative price (Williamson, 1976). This rise in the relative cost of living facing the

urban poor is, furthermore, understated since it excludes rents. We have better evidence for Britain in that regard.

The relative price of food also rose during the First Industrial Revolution across the Atlantic. Table 5 shows by how much over the two decades shortly after the French Wars and prior to the tariff acts of the 1840s. The terms of trade between food (accounting for 63.8% of the poor's budgets) and textiles (accounting for only 13% of the poor's budgets) almost tripled.

Furthermore, Table 6 shows that urban rents facing the poor also increased dramatically in relative price (accounting for between 23.2 to 44% of the poor's budgets), around 2% or 3% per year between 1800 and 1840. Real rents therefore may have increased by as much as 30% each decade, an enormous figure which served to erode the urban poor's living standards from 7 to 13% each decade (30% times .232 or .44). And this is probably an understatement since the quality of their housing is likely to have declined over time as they cut back demand in the face of rising price.

Thus, the poor suffered on two counts, on the employment and the expenditure side. Increasingly expensive food and housing forced them to economize on both, lowering nutrition intake and crowding them in to slum dwellings where they were exposed to greater health hazards. The result was far higher mortality and morbidity rates in the cities (Table 7), and this is where an increasing number of the poor were located as the industrial revolution wore on. The cities remained that way throughout Europe and America until late in the century when the state began to allocate more social overhead to the expensive task of cleaning up those urban environments.

What about the Living Standards of the Poor?

Rising inequality is one thing, but the standard of living of the poor is

another. The former need not imply no gains in the latter. The best information documenting living standards of the poor during 19th century industrial revolutions comes from Britain, and it is summarized in Figure 4. Four occupational groups are presented there: two representing the poor -- farm laborers and the urban unskilled ("middle group"), one representing the more skilled urban worker ("artisans"), and one representing the most skilled and literate in urban services ("white collar"). Up to 1819, there was almost no increase in the living standards of the poor. Between 1819 and 1851, living standards of the poor did rise, but they rose by less than skilled workers, and farm laborers lagged behind most as the wage gap between city and countryside opened up. Furthermore, we know that these modest real wage gains among the poor would be even more modest were we able to adjust for the declining quality of life associated with those high-mortality and disamenity-rife cities.

* * * * *

Having established British and American experience with inequality and living standards of the poor during their industrial revolutions, the remainder of this essay will focus on poverty. How did the share in poverty behave over time, what were its determinants, and who were the poor?

III. WHAT ABOUT POVERTY?

Trends in Poverty

What can we say about the extent and composition of poverty in the 19th century industrializing countries? Recent studies by Irma Adelman and Cynthia Taft Morris (1978, 1988) have used an admirable range of sources to make comparisons of poverty across countries in the 19th century. Their conclusions are pessimistic as to the effect of economic development on the lives of the poor:

> "...in countries at low levels of development any kind of structural change such as industrialization or expanded commercialization tends to increase poverty among the poorest members of the population" (1978, p.256).

Much of the evidence behind this conclusion, however, is qualitative and impressionistic. There are dangers in using such evidence. For example, an increase in writing about the poor in the 19th century need not reflect an increase in the extent of poverty. Upper classes may have been made more aware of poverty by changes in its form and location. As we noted in the previous section, rapid urbanization brought with it an increase in the most obvious and outward signs of poverty -- residential crowding -- located near the doorsteps of the urban middle classes. The impression that this squalor made on Henry Mayhew and Charles Dickens is important in its own right: it has shaped the popular image of poverty during the industrial revolution. Such

evidence, however, will not easily support quantitative claims that there was more poverty in rapidly industrializing England than in slower industrializing France (Adelman and Morris, 1978, p.254), where more of the poor were rural and out of sight. It may say more about awareness of poverty than its prevalence.

We need numbers. Ideally, we would like to have nation wide, household survey data of the kind favored by Fields (1989, p.5) in his recent survey of poverty and economic growth in the contemporary Third World. Unfortunately, no such data exists for most of the century. It is only toward the end of the 19th century that a series of detailed investigations of urban poverty were made in specific English towns. Although these investigations were still locally based, they can claim to be the precursors of the kind of household surveys on which Fields would like us to rely. (See Hennock (1987) for a useful historiography.) For earlier periods, we have to rely on data generated by the provision of poor relief by local administrators to "paupers" in Britain and America. These official pauper statistics include time series of numbers of paupers and relief expenditure by local area and year. And they sometimes tell us who were the paupers.

Pauper statistics are hardly an ideal poverty index, so what can they tell us? To answer this question, we first have to ask what determines the proportion of people in receipt of poor relief (pauperism rates) at any place and time. We can divide the determinants of pauper rates into the demand for poor relief (the extent of poverty), the supply of public relief, and the supply of private substitutes. All are of interest to us in this essay.

First, consider the demand for poor relief. A rise in poverty, either generally or within a certain age and gender group, should increase the pauper

rate. Four forces are likely to contribute to this result, and they are all correlated with the industrial revolution:

(a) The real wages paid to unskilled labor might lag behind or even fall. We have discussed these trends and the likely effects of industrialization on them in Section II;

(b) Incomes of the poor may become more variable, both seasonally and with fluctuations in market demand;

(c) Secondary labor market and production opportunities may disappear for those in the most vulnerable categories, and even primary occupations of some of these poor may be displaced;

(d) Demographic forces may glut the labor market from below or increase dependency rates, increasing the population share vulnerable to poverty and pauperism. These forces are likely to be systematically related to the demographic transition, a by product of the industrial revolution.

The second major determinant of pauper rates is the supply of relief. The more generous is the relief offered and the easier it is to obtain, the higher the pauper rate. MacKinnon (1984, pp.171-3) points out that the costs of obtaining relief might be higher than they first appear to the historian. The social stigma and signalling effects attached to having once been a pauper might diminish future access to jobs and credit, thus raising the cost of going on relief.

Third, private means of support for the poor and vulnerable may serve as a substitute for public relief. Thus support within the family, by private charity, by private insurance, or by a member's trade union reduces the numbers on public relief.

Historians have almost always used statistics to assess and explain government policy toward the poor; i.e. the supply of relief. Higher pauper rates and expenditures on relief have, therefore, been taken to indicate less restricted relief practice and hence a better safety net for the poor. However, recent innovative work by Joan Hannon (1984b, 1986) on New York State and by Mary Mackinnon (1984, 1986) on England suggests that pauper rates can be used to get a measure of poverty provided we control for differences in policy.

In both Britain and America, local authorities were legally obliged to provide some form of relief to applicants. This relief was not always generous. Indeed, and as we shall see below, it was a matter of central government concern then and now that "over generous" assistance should not encourage the poor to become a tax burden on the state or reduce individual incentives to work and save. In both countries, the workhouse or poorhouse test was used to diminish this risk. Certain classes of paupers were often only offered relief inside the workhouse. It was hoped that the unpleasant conditions of the workhouse would discourage application by all but the most needy. Hannon and MacKinnon suggest that the proportion of paupers relieved inside the workhouse or poorhouse is a good proxy for the harshness of this aspect of government policy.

Figure 5 (taken from PP, 1900, X, Appendix II, pp.10-11 and 22-23, and PP, 1904, VXXXII) tests the claim that pauper statistics can be used to proxy poverty. It uses a survey made at 28 places in England in 1899 of incomes of people over age 65. The horizontal axis shows the proportion of old people who had incomes under 10s a week among those who's incomes are known. The vertical axis shows the proportion of old people surveyed who were or had been on

outside poor relief. There is a clear if imperfect relation (correlation coefficient: 0.576) between the numbers living on low incomes and those on poor relief.

Does this relation hold up if we control for policy? The regressions in Table 8 suggest that it does. The regressions seek to control for policy by including the ratio of old paupers in the workhouse to total old paupers for the administrative areas corresponding to the sample locations. (In London a high inside ratio reflects the large numbers of hospitals so an interactive dummy variable controls for London policy.) The dependent variable is the sample outdoor pauperism rate. We would expect the proportion of paupers to be high where the proportion on low incomes is high. Where the proportion of paupers indoors is high, we expect to find fewer outdoor paupers (reflecting the influence of the harsh policy). In both regressions, the coefficients on low incomes and policy are correctly signed and significant. If we take the log form, it suggests that a doubling in the proportion of old people on low incomes increases the proportion on out relief by about three times.

Having established that pauperism can be used as an imperfect proxy for poverty, what can we say about long term trends? Unfortunately, it turns out to be difficult to control for policy over long periods. Firm conclusions are hard to squeeze out of the data.

Figure 6 (from Williams, 1981, p.164) shows long run trends in the pauper rate for England, 1840-1939. The breaks in the series (for example in 1849) represent changes in the way in which the pauperism is measured. At first sight, there appears to be a clear trend downward in the pauper rate from the famines of the late 1840s up to World War I. (The post war figures are not comparable as they include recipients of new state benefits.) However,

a closer look reveals that it is outdoor pauperism that declined. The mean number of paupers relieved in the workhouse as percentage of the population in England and Wales was almost unchanged from 0.77% in 1850 to 0.78% in 1910 (Rose, 1972, p.50). Williams concludes that the overall decline is evidence of the authorities' success in limiting access to outdoor relief rather than an improvement in the standard of living of the extreme poor. Nonetheless, the decline in overall pauper rates after the 1840s is consistent with the inequality and unskilled wage trends discussed in Section II.

So far, we have discussed trends in poverty following the late 1840s. What about the early industrialization period, years of greater interest to contemporary analysis of Third World problems. Here we are on even shakier ground. The original "social tables" by Gregory King (1688), Joseph Massie (1759), Patrick Colquhoun (1801/3, 1812), and Dudley Baxter (1868) took very different approaches to estimating pauperism, but they did supply some well-informed guesses. The revised social tables imply the following trends for the percent in poverty (Williamson, 1985, p.70):

1759	12.5%
1801/03	19.9
1812	14.8
1850	10.0
1867	6.2

The shares in poverty rose in the late 18th century, a period of rising inequality and stable real wages of the poor. The rate of fall between 1812 and 1850 was slow, 0.3% per decade, while it accelerated thereafter, 2.2%, a result consistent with Figure 6 and with the inequality and unskilled real wage trends documented in Section II. However, changes in supply of relief may

have influenced those estimates of poverty, and relief generosity rose up to the early 19th century, falling by 1850. Thus these trends also must be treated with caution.

MacKinnon (1984, 1986) concentrates on long run trends in English indoor pauperism from 1860 to 1910. She is able to break up the data by region and type of pauper and, by using regression analysis, purges the data of some of its policy component. Wage data for this period suggests that working class incomes were sharply rising (Williamson, 1985), but, except for specific groups, there is no consistent fall in the policy adjusted indoor pauper rate proxying the experience of the extreme poor. This prompts MacKinnon toward tentative pessimism as regards late 19th century trickle down to the extreme poor:

> "...it seems highly probable that the very poor were little better off in 1910 than in 1860" (MacKinnon, 1984, p.271).

Hannon's work on New York State starts earlier. Table 9 reports pauper rates for New York State at five year intervals. On the face of it, pauperism (and poverty) was on the rise throughout the antebellum period just as was inequality. While Hannon reserves judgement on the postbellum figures, she views the trends up to 1860 as evidence of an increase in the demand for poor relief and thus of the distress of the poor, especially given that policy was becoming "increasingly stingy across the antebellum period" (1984b, p.1008).

Although the long-run effect of early industrialization on those in extreme poverty can be debated, the effect of short run macro fluctuations is certain. For example, when English growth slows down dramatically after 1900,

there is an unambiguous increase in indoor pauperism (MacKinnon, 1986, p.333). As we would expect, recessions are bad for the poor but we should not confuse fluctuations with long term growth and industrialization, We will have more to say about macro instability below.

Regional Variation in Poverty: Industrialization and Urbanization

Can we get a better impression of the aggregate effect of long term economic development on the poor by comparing pauper rates in different regions? Since development took the form of industrialization, it might be useful to compare agricultural with industrial counties.

Table 10 reports pauperism rates for industrial and agricultural counties for 1802-3, in the early stages of the British industrial revolution. When London is excluded, the last two rows of the table suggest that there was no obvious difference in the generosity of relief policy (as measured by the proportion of paupers forced into the workhouse) between agricultural and industrial counties. However, despite the high agricultural prices at that time caused by the Napoleonic War, there was a far higher proportion on relief in the agricultural countries. This suggests either that poverty was more widespread in agricultural areas or that it was more widespread in those areas (the South) most distant from new industrial job opportunities. The latter seems more likely given the favorable prices facing agriculture during the war.

Unfortunately, this parliamentary return omits most northern agricultural counties so it is hard to distinguish whether it is agriculture per se or location that is driving the high pauper rates. But the data we have

suggests that it is location. Of the agricultural countries, the two northernmost listed (Lincoln and Rutland) were the least pauperized. Among the ten industrial counties listed, three of the four with pauper rates over 13% are southern while five of the six with rates under 10% are northern.

It appears that in the midst of the British industrial revolution, the poor fared better in the regions that underwent industrialization whether or not their immediate locality was agricultural or industrial.

Evidence from the end of the century provides further support for the view that whether the immediate locality was agricultural or industrial had less effect on pauperism rates than whether the area lay within a region that had undergone industrialization. A survey of aged paupers in 1892 (PP, 1895, C.7684, vol.XIV, p.cvi) showed that in some regions of the country old age pauperism was higher in agricultural localities but in other regions it was higher in industrial localities. Whatever the main source of local employment, however, the survey found old pauperism lower in the North, where industrialization had been most dramatic.

MacKinnon (1984, pp.198-9, 222-3, 1987 p.621) has done work for England in the 1860s that is consistent with the view that poverty was more intense in the regions that were slow to industrialize and that this was more important than whether a locality within the region was industrial or agricultural. Pauper rates in the largely agricultural South were up to twice as high as those in the industrial North.

It seems likely that the effect on poverty of higher incomes and greater variety of earning opportunities generated by industrialization in the North spilled over into the agricultural areas within the region. Labor mobility clearly would account for that result. Labor could and did move to urban areas

within the North and within the South but it was more reluctant to move longer distances from the South to the industrializing North (Williamson, forthcoming, chp.2). The result was lower wages and greater poverty in the South.

MacKinnon's regressions also show that pauper rates in the 1860s were significantly lower in those areas which had population growth rates above the regional average. These were areas in which growth was occurring fastest and to which labor was migrating. There is a problem of simultaneity here: were the low pauperism rates one reason why the labor immigrated or was the rapid growth in these areas pulling people out of poverty? Probably both forces were at work. As yet we do not have the necessary evidence to untangle these two effects but what we do have is not inconsistent with the view that the poor were better off in rapidly growing areas.

What about urbanization itself? Linear regression analysis comparing the degree of urbanization (local population density) with the pauper ratio on both sides of the Atlantic shows only a weak tendency for poverty to be worse in larger and more dense towns after controlling for employment mix, policy and other influences (Hannon, 1984b; MacKinnon, 1986). A result from the British 1892 enquiry that also shows up in the general pauper census of 1906 is that there is no clear relation between the degree of urbanization and pauperism. Table 11 shows that pauper rates were highest in London but for smaller towns and cities the relation is mixed.

Within towns it appears that concentration on a single, high skill industry resulted in the lowest poverty rates. At the end of the period, we have household survey evidence from six medium sized towns: York (Rowntree, 1901), Bolton, Northampton, Reading, Stanley, and Warrington (Bowley and

Burnett-Hurst, 1915; Bowley and Hogg, 1925). Table 12 compares the extent of poverty (i.e., not just pauperism) in these towns. What is notable is that the towns with the lowest poverty shares are those that are the most specialized; Stanley in mining, Bolton in textiles, and Northampton in boots and shoes. Reading and York were the least industrialized towns in the sample with Reading the only true Southern town. Northampton was not a northern smokestack town but was "the very center of one of the most prosperous industries of the country" (Bowley and Burnett-Hurst, 1915, p.49) and one in which a craft sector survived. Warrington was both a smokestack town and located in the industrial heartland but it did not appear to have a single dominant successful industry.

Who Were the Poor and Who Were the Paupers? Links to the Demographic Transition

It important to ask who were poor and who were paupers for two reasons. First, economic development may affect different groups in different ways. If we can identify the groups that are poor we may be able to say something more useful about the relation of poverty to growth. Second, there may be differences between the composition of the poor and that of the paupers. The poor were largely in households of low-wage, unskilled workers so the main forces driving changes in their well being were those discussed in Section II. The paupers, on the other hand, represent the extreme poor. Their well being may be less directly related to the wages of the unskilled.

Male able-bodied pauperism fell over the century in England: the number of male able bodied paupers in 1901 was approximately 7% of the number relieved in this category in 1802-3 (Williams, 1981, p.40-1). Part of this

fall was the result of a conscious effort by British authorities to refuse outdoor relief to healthy adult males. The other force was market related -- rising wages driven by the forces discussed in Section II. The decline in male able-bodied pauperism was neither steady nor continuous. As we shall discuss below, recessions pushed unemployed workers into pauperism. But it is clear that by the end of the century, we must look beyond the adult male workforce when discussing pauperism and extreme poverty.

In the 19th century as now, the old, the sick, widows, single parents and their children, and those in large families were much more likely to be very poor than other groups in the population. Poverty obeys a life cycle pattern. This is illustrated in Figure 7 (taken from PP, 1910, LIII, Appendix XXV, Part II, p.56, 108-9) which shows pauper rates in England and Wales in March 1906 by age group. The solid line shows total pauper rates and the broken line indoor pauper rates.

It is clear that pauper rates rise steeply in old age. Almost one in five of the population over 65 and almost one in four of those over 70 were receiving poor relief at the time of this census. In part this may have been due to more generous state relief policy for the old than for others, but the fact that the proportion of the old in the workhouse was also high suggests that part of the high old age pauper rates was due to old age poverty.

Those over 65 constituted 28.3% of all paupers in the 1906 census and 35.3% of those in the workhouses. Unfortunately, there is no data on the ages of outdoor paupers before 1890, but the percentage of paupers who were listed as "not able-bodied" (a category in which 80% were over 60 in 1906) rises from 38.9% in 1850 to a peak of 49.2% in 1900. The percentage of indoor paupers aged over 65 rose in the same period from 19.8% to 36.5% of the workhouse

population (Williams, 1981, pp.204-5). In both cases, part of the rise was due to the restriction of outdoor relief to the old that took place in the 1870s but (see Table 13) the trends continue until 1900 suggesting that government policy is not the only driving force.

Three conclusions seem warranted by the data. First, the economic position of the old was falling behind that of the rest of the working class in the late 19th century. Second, and as we shall discuss in Section IV, English poor relief was becoming less generous to the old over the same period. The second point may be part of the explanation of the first but the high number of old in poverty suggests that we should pay special attention to the effects of industrialization on the old. Third, as the size of this older and more vulnerable age class increased over time, it should have raised total numbers in poverty. This became increasingly the case as Britain began to move along the downside of the demographic transition and the older individuals increased in relative importance. Similarly, an increasing number of aged were left behind by their children who migrated in increasing numbers to cities in Britain and the New World (Williamson, 1986).

Let us return for a moment to Figure 7. In addition to the high pauper rates in old age there was a much smaller "hump" during childhood, peaking between 10 and 14 and then falling rapidly as the teenager entered the labor market. This pattern is consistent with the observation that household poverty often results from a high ratio of dependents to earners. Was child pauperism primarily due to the presence of many dependents in large families, or was it due to the fact that there were few earners in the household?

Table 14 shows the household circumstances of all pauper children in England and Wales in 1908. It is clear that at the end of the 19th century

only a minority of child paupers were in two parent families. Over half of all child paupers were in households headed by women, especially widows. The circumstances of women and children were closely related.

Table 15 shows the ratio of female to male pauper rates by age group, for England and Wales, in 1906. The proportion of women who were paupers rises relative to the proportion of men through early adult life peaking between ages 35 and 45 and then falling. The upswing coincides with childbearing age and was probably due to the burdens of parenthood especially on single or widowed mothers. Women were more likely to be driven to pauperism by parenthood than men. The downswing may reflect a greater tendency for women to be supported in their children's homes than men, especially where grandchildren needed minding.

The vulnerability of widows to pauperism should be familiar to anyone acquainted with modern developing countries, and this phenomenon did not originate with industrialization. What evidence we have for pre-industrial England suggests that it was far harder for a widow to remarry than a widower and especially hard if the widow had dependent children. Supporting a family as a single parent was difficult. Consequently, almost 40% of widow headed households in 18th century England were on relief (Smith, 1984, pp.435-6, 444-6).

Table 16 shows that there was a decline in the proportion of widows with children who were paupers in late 19th century England (column B) along with declines in the proportion of paupers who were in widow headed households (column A) and a decline in the overall proportion of paupers who were children (column C). Once again, these trends can be explained partly by government policy. Outdoor relief to these groups, as to the old, was

systematically cut in the 1870s. However, the decline continues beyond the period of less generous relief policy, up to the eve of World War I. This is probably due to the accelerated decline in fertility after the 1880s (MacKinnon, 1986, pp.332-3; Boyer and Williamson, forthcoming). As the number of dependents declined, more single parents were able to get by without being driven into pauperism. As in Table 16, column D shows lower fertility was not reflected in fewer children per widow on relief, but it was reflected in there being fewer widows forced onto relief. These dependency rate effects should have played a symmetric role when poverty rates were rising in the late 18th and early 19th century, on the upswing of the English demographic transition which yields peak rates of population growth between 1820 and 1840. That is, a good share of rising poverty up to 1820 or 1840 is likely to have been driven by rising fertility and increasing dependency rates. The opposite seems to have been true in the late 19th century.

Sickness is often a cause of and caused by poverty. About half of able bodied paupers in England from 1891 to 1908 were relieved due to sickness either of themselves or a family member. The diseases that figured most prominently among those aged 16 to 50 were forms of tuberculosis, bronchitis and pneumonia. We shall have more to say about sickness among the poor, and its correlation with urbanization, in Section IV below.

We have now looked at the composition of English pauperism. How about the composition of English poverty? We can get an impression of urban poverty at the end of the century from the social investigations of Booth, Rowntree and Bowley. Table 17 gives a breakdown of the proximate causes of poverty, and it is clear that most of the poverty found in these towns was associated with low wages or large families. Even at the end of the period, the lower end

of the unskilled wage range was insufficient for all but small families. It is worth noting that the lowest proportion of the poor associated with very low wages (insufficient for three children) was found in those towns where there were fewest poor. As we discussed above, the specialized industries in these towns appears to have pushed wages up above the poverty line.

Widow headed households, the old and the sick made up a far smaller proportion of the poor than of the extreme poor, that is of paupers. A table of poverty rates by ages constructed by Rowntree (1901, p.443) for York shows the same increase in old age as we saw for the pauper cycle in Figure 7, although not as dramatic. As with pauper rates, there was a bulge in poverty rates before age 15 with approximately 27% of working class children living in poverty. But whereas before we saw that most child pauperism was explained by single earner families, most child poverty occurred in large families where the chief earner was low paid.

The difference in the composition of the poor relative to that of paupers is explained by Rowntree's poverty line being drawn at a much higher level than some official line below which people became paupers on relief. The poor as defined by Rowntree's poverty line included 16% of the people surveyed, while total pauper rates in England and Wales at this time were at 2.2%.

Support for the view that the paupers represent the poorest of the poor can be found in Rowntree's own investigation of York in 1899. Rowntree divided the households into classes. The composition of the poorest class (those with a household income <u>equivalent</u> to less than 18s a week for a family with two adults and two to four children) looked much like the composition of pauperism. That is, 47% of its members were in widow or single parent headed

households and 19% were in households where the head was ill or old (1901, p.45.).

Pauperism was a level below most poor households in England at the end of our period, but it was not divorced from general poverty or from the wage economy. The low paid, many of whom comprised the poor, were also those most likely to fall into pauperism in old age or in the event of a crisis such as the illness or death of the prime wage earner.

The 1906 special census includes a breakdown of paupers by past occupations and a separate pauper rate for each past occupation group. Table 18 draws on this information. For adult males the average pauper rate was 213 per 10,000. General laborers and those in agricultural occupations -- the largest two categories of low paid, unskilled workers -- had the highest probabilities of falling into pauperism, with pauper rates of 848.6 and 397.3 respectively. If the pattern of past occupations of paupers in 1906 is representative of what went before, it underlines the importance of the returns to different classes of labor in explaining poverty. We discussed what underlies changes in the pay structure in Section II.

What about the U.S.? Hannon gives the composition of paupers in New York State and it is reproduced here as Table 19. The composition of U.S relief recipients looks more like the English poor than the English paupers. But there is no mystery here. New York State poor relief was more generous than its English counterpart so more people were on relief: 6.6% of the population in 1860 and 3.5% of the population in 1895 (see Table 9), compared with pauper rates in England of 4.3% and 2.7% respectively.

Seasons, Cycles, and Secondary Activities

By secondary occupations, we mean jobs typically undertaken either by secondary earners in a household or by the prime earner as a secondary income source. What were these occupations? Before and during the early stages of industrialization, rural domestic, household, or cottage industries such as spinning and weaving often supplemented the household's main income source. Later in the industrial revolution, we see the development of what are called the "sweated" trades, like clothes-making shops, most notably in large cities like London and New York City. Throughout we see those occupations that are now associated with the "informal sector" in the Third World like cleaning or street hawking.

Domestic manufacturing was hardly the only secondary occupation important in rural areas. Whether owner occupiers or tenants, small farmers often had a variety of land uses in addition to their major crop. Households whose main source of income was wage labor also cultivated a small plot on which they grew crops either for own consumption or for the local market. Even landless households in pre-industrial England kept their own livestock, using the commons for grazing, while urban workers often kept pigs and chickens.

Such activities were of special importance to the poor. These secondary activities formed part of the "safety net" against poverty. At times of crisis, such as periods of high unemployment or the death of the chief wage earner, the secondary occupation became the primary income source. Secondary industries often had a different seasonal cycle than primary occupations and hence smoothed both demands on household labor and thus the household's

income. Outlets for the products and services of secondary industries were often localized and hence were less subject to macroeconomic demand fluctuations than the wage income of the primary earner. A variety of household income sources spread market and other risks.

Furthermore, these sectors typically employed a high proportion of old age, child and female labor; groups which we have now identified as the most vulnerable to extreme poverty. The fate of such industries in the course of industrialization can thus have great impact on poverty. The importance of these secondary activities to poverty is not very different in modern industrializing countries than what it was in the 19th century.

The role that secondary activities or occupations for the poor close to pauperism can be illustrated as late as the turn of the century. Secondary activities often appear among the occupations reported in the 1906 English pauper census. Table 20 lists some examples of high female pauper rates for various sectors. As the census officials noted, the female occupation list was dominated by jobs that older women entered in an attempt to avoid sliding into pauperism. The highest pauper rates outside of agriculture were found among charwomen, laundry women, hawkers and street sellers, all informal service or sweated occupations. These industries were those in which it was easiest for poor women, such as widows, to find work.

The high female pauper rate among agricultural workers reflects, in part, low wages of these. More importantly, by this time few women were working for wages in agriculture -- the absolute number of female paupers who had been employed in agriculture is not very high. Those women who worked in the agricultural sector no doubt included many who were forced into the wage labor market by family crisis.

By 1906, domestic industries do not figure so prominently among the occupations of paupers, but Table 20 still shows high pauper rates among seamstresses and tailoresses. Table 18 showed high pauper rates among men in the same sector. These trades were undertaken partly in sweat shops and partly at home or domestically. There were still disproportionately large numbers of paupers from those domestic industries still struggling to survive in the minor textile trades (textile industries other than cotton, wool and worsted, and silk manufacture), but the minor textiles were no longer a viable means of support for the majority of the poor in 19th century England, and had ceased to be important among the occupations listed by paupers.

The fact that the urban poor were frequently employed in secondary industries (Treble, 1979, pp.13-51) together with the preponderance of paupers coming from sweated and informal occupations, led many contemporaries and some historians to write as if the existence of such trades was the cause of 19th century poverty. In fact, life for the poor would have been worse without these industries. When new factory industries in the North of England undermined the older trades in London, sweated trades grew up in the capital to absorb the displaced poor (Jones, 1971). Immigrants were absorbed in similar occupations on the eastern seaboard cities of the U.S.. With abundant unskilled labor supplies, informal sector pay was often low and work conditions in the sweat shops often ugly, but these industries did not cause poverty; they were a symptom of it. If these activities had not existed, the poor would have been forced to find work even lower down the marginal product of labor curve, or perhaps to become wards of the state.

Why do we find the most vulnerable groups -- the old, women and children -- employed in domestic industries? Low strength requirements of most

domestic tasks offers one explanation. In addition, domestic workers could, to a large degree, arrange the demands on their labor to accommodate supply, the latter determined by child rearing and outside labor demands. Production patterns could be altered to incorporate needy kin (Hannon, 1984, p.1019), and access to these occupations was free of restraint. Working in domestic industries was convenient for women with children and for older people both because the work was located in the home and because the pace and timing of work was relatively flexible.

We have reasons to believe, therefore, that the presence of domestic or household industries and small land allotments reduced pauperism. They provided alternate income streams which became very important in the event of the chief wage earner being incapacitated or of some collapse in the demand for market labor; they smoothed out the seasonal fluctuations in the demand for market labor; they provided employment for secondary workers in households headed by a primary worker; and they provided employment for those groups most vulnerable to poverty.

Is there any evidence to support this view? First, while rarely agreeing on anything else, contemporary experts on poverty and the rural economy in late 18th century England (such as Arthur Young, David Davies and Frederic Morton Eden) all agreed that the erosion of allotments and domestic industries in the South were a major cause of pauperism (Boyer, forthcoming, ch.2). Second, George Boyer (forthcoming, ch.3) has undertaken an impressive empirical analysis of pauper relief expenditures in the South of England in the first part of the nineteenth century. Boyer found that the presence of cottage industries in an area had a significant negative effect on pauper rates. Large allotments also appear to have reduced relief burdens. Third, in

her study of pauperism in New York State in the second quarter of the nineteenth century, Joan Hannon (1984, 1986) looked at the effects of household production on pauper rates in different areas and over time. She also found that household production was negatively correlated with pauperism.

We can also document the effect of the demise of a particular household industry on employment opportunities for women and the old. Quadagno (1982) has made a useful in depth study of the town of Chilvers Coton (near Coventry, England) in the latter half of the 19th century. The main household industry of the town in 1851 was silk ribbon weaving. Two classic forces of economic development undermined this local industry. The repeal of tariffs increased competition from the French silk industry, and new technology led to competition from emerging factories. Between 1851 and 1901, male employment in the silk industry in England fell from 53,936 to 11,058, and female employment from 76,787 to 26,422.

In 1851, only 28% of silk weavers were male in Chilvers Coton, and of these 40% were under 20 or over 60. Female labor participation rates were 85% between ages 20 and 40, and still 50% among those over 70. Figures 8 and 9 show the labor participation rates over the life cycle for males and females in 1851, and then again in 1901 after the demise of the household industry. For males, the main change is the eradication of old age employment with participation rates falling dramatically for those over age 60 in 1901. For females the change is even more dramatic: labor participation was reduced at all ages with only the young retaining employment in domestic services (not to be confused with domestic industry).

In Chilvers Coton, the decline of a locally important household industry, due to two key processes of economic development, market expansion

and new technology, led to the virtual eradication of labor opportunities for women and the old. It is reasonable to expect that in the transition these groups became even more vulnerable to poverty. The story seems to be the same in early 19th century New England when the cotton textile factories wiped out domestic spinning almost overnight, or in late 18th and early 19th century Ireland where factory competition from the Lancashire mills in England did the same.

It would be a mistake, however, to give the impression that economic development and technical change always displaces such secondary industries. It can also create them. A good historical example is offered by the evolution of textiles technology using cotton and wool. In the late 18th century, new factory technologies destroyed the household hand-spinning industry, but the cheaper thread it produced led to a boom in the household weaving industry. The number of handloom weavers in Britain increased by a factor of five between 1780 and 1810 to make use of the cheaper input that new factory-based technology had produced. In the early 19th century, new factory technologies then undercut the hand loom weavers so that by 1851 their number had returned to its 1780 level. Nor was this the end of the process. The new cheaper cloth was a factor in the emergence of new sweated clothes-making industries where it was an input. These industries also benefitted from technical changes such as the invention of the sewing machine. By the end of the period, however, even the sweated trades were being displaced by factory production; Feinstein (1987, graph 1) shows that wages in the clothing sector were falling at least relative to those economy-wide.

The fact that the same new factory technologies which displaced one domestic industry often created another should not, however, lead us to the

false conclusion that the extreme poor were unaffected on net. The new industries were often distant from those they replaced. And when an industry was overtaken by technology, the old were often in the worst position. They lost a return on acquired, product-specific skills, and it was often hardest for them to migrate since they had invested most in their current location and had a shorter future life over which to defray the cost of a move. A typical pattern appears to have been for the children of displaced workers to migrate while the old stayed put, suffering the falling wages and pauperism that accompanied deskilling.

The main factors determining the returns to unskilled labor were discussed in Section II. However, the conditions of labor supply to secondary activities deserves separate consideration. As we have already mentioned, the poor would gain easy access to these industries thus depressing wages for incumbents. And as Boyer (forthcoming) has pointed out, the long run supply of labor (i.e., labor migration to the areas where these industries flourished) was determined not by wages in the domestic industries alone but by the total household incomes obtainable in the area including the job opportunities of the primary wage earner. Thus, in rural domestic or urban informal and sweated sectors, widows had to compete with unmarried young women for whom the employment was often a source of supplementary family income. Incomes from these secondary activities may have been sufficient when combined with primary incomes, but they represented very low pay in the absence of some primary income source.

How did industrialization affect seasonal fluctuations in labor demand? This is an important question since we know that seasonality in labor demand also produced seasonality in pauperism especially among able bodied men. We

have already mentioned that secondary industries smoothed both the seasonal demand for labor and household income either by having different peaks or by its inherent flexibility in time demands. The factory-induced destruction of the cottage industry was one reason why seasonal income cycles became more pronounced in 18th century England (Snell, 1985, chs.1, 4). Increased crop specialization, driven by rising grain prices, had the same effect. This process also applied to the U.S. where western agriculture became increasingly linked to world markets by transport development, encouraging specialization in grain. Enclosures in 18th century England had the same effect by encouraging crop specialization and by removing secondary occupations such as keeping livestock. The effect of enclosure shows up clearly in Figure 10. The figure shows the percentage of paupers over the whole year that were relieved in a given month. The figure shows that the pattern of labor demand after enclosure was much more seasonally pronounced than before. Snell has similar evidence for the effect of grain specialization and new threshing machines on seasonality.

While these forces probably made the poor more vulnerable to seasonal cycles, they are not typical of the effect of development on seasonality. As Peter Timmer (1969) has shown, even within agriculture new crops such as turnips spread out labor demands over the year. MacKinnon (1986, p.325) shows that the difference between summer and winter pauper rates declined across late 19th century England. In general, therefore, industrialization led to less seasonal variation in pauper rates. Although many industrial activities like construction remained seasonal, as development moved employment away from agriculture, it eventually led to a reduction in the importance of seasonal fluctuations in labor demand.

While development may have reduced the problem of seasonality in labor demand, it increased the problem of market-oriented macro shocks. To see the importance of macroeconomic cycles on poverty, Figure 11 plots male able-bodied indoor pauper rates in three areas of England against unemployment from 1850 to 1910. (The short run instability is due to the seasonal fluctuations discussed above). A strong relation between the pauper rates and unemployment is apparent, with pauperism following unemployment with a slight lag. This result is confirmed by regression analysis, as is the relationship between pauperism and other macroeconomic indicators (MacKinnon, 1984, 1986). The relationship between pauperism and the macroeconomy was strongest in the North where industrialization had proceeded furthest (see also Southall, 1988). Hannon argues that the changing structure of pauperism in the U.S. in the first half of the nineteenth century was also due to greater reliance on the market. Short term unemployment became a more important cause of distress as people became more dependent on specialized wage labor and as domestic employment declined.

In short, poverty became more subject to market fluctuations in the late 19th century as technology and the division of labor led economic agents to be more closely dependent on the market. Technical change and market development undermined secondary activities. These activities were important supplements to primary household incomes especially when the primary wage earner was incapacitated, during seasonal episodes of low labor demand, and when macroeconomic shocks caused unemployment. They were also important as primary income sources for certain social groups for whom pauperization was a greater risk. One lesson we can take from the 19th century is that it is the old and women with children who find it hardest to adapt to these economic events.

IV. POLICY AND POVERTY

Overview

This essay is already very long, but we cannot leave our survey of the connections between 19th century industrialization and poverty without some attention to policy. There are two issues which this section confronts. First, the impact of macropolicy on the poor. Second, the response of policy to poverty. The literature on both is enormous, so that we will have to be selective. Although it was clearly the most important in the 19th century, only one aspect of macropolicy will be discussed -- the impact of policy on the terms of trade between foodstuffs and manufactured goods. As far as the response of policy to poverty is concerned, we consider only two, although they are the most important two -- social overhead investment in the cities and safety nets. The policy impact on the terms of trade and city social overhead investment certainly have a prominant place in Third World debate, and we have already seen in Section II that they were central forces influencing the standard of living of the poor on the expenditure side during 19th century industrial revolutions.

Policy Intervention and Price Twist

Every development economist is acutely aware of the pro-urban bias embedded in Third World development strategies (e.g., Lipton, 1976), strategies which are manifested in particular by a policy price twist unfavorable to agriculture, policies which we think are detrimental to the poor, especially where agriculture is dominated by small, poor, owner-operators. Development economists may be less familiar with the fact

that this strategy is fully consistent with the past century or more of historical experience with industrial revolutions. It is not idiosyncratic to the Third World, but rather generic of most industrial revolutions. If development analysts were better acquainted with this fact of history, they might be less frustrated by their inability to change it.

In a recent paper on modern fiscal redistribution, Peter Lindert (1989) has shown that most economies undergoing the industrial revolution evolve from policies which tax export-oriented agriculture to ones which subsidize it. Symmetrically, the favored treatment of import-competing manufacturing declines with development. Lindert also shows that this switch in policy has a close positive correlation with the other modes of fiscal redistribution discussed briefly in Section II. There we documented an increase in fiscal progressivity across the 20th century among the industrialized nations, fiscal trends which themselves correlate with egalitarian trends in pre-fisc incomes generated in the marketplace. Anti-agriculture policies, regressive fiscal policy, and inequality seem to go hand in hand as countries rise to NIC status on the upswing of the Kuznets Curve; they tend to retreat from those policies thereafter when egalitarian trends are set in motion on the downside of the Kuznets Curve.

As Lindert points out, this pattern is revealed by American history. In the first half of the 19th century, while America gained about four decades of experience with the industrial revolution, manufacturing received modest levels of protection. Producers of export staples in the cotton South were well aware of the tax which such policies implied, but had the political clout to resist. The Civil War eliminated that clout, and anti-agriculture price twisting policies persisted for about seven decades until the 1930s. Since then, agriculture has been favored not only by price supports, but also by explicit transfers. A similar policy evolution can be found in Japan's modern

history, although anti-agriculture policies appear somewhat earlier in her industrialization experience and take the form of direct taxation rather than of price twist. This was certainly true of Meiji Japan, but farmers were receiving high levels of net protection by the late 1930s, a trend that continued into the post World War II period (and frustrates American export interests today). The industrial revolutionary experience of Korea and Taiwan have been far more rapid and thus the switch in policy towards agriculture has been compressed within a shorter time period, evolving from policies in the 1950s which depressed farm prices to policies in the 1980s which support them. Similar tales can be told for France and Germany. Classic industrial protection in the 19th century began to erode in the face of agricultural interests in the early 20th century; aggressive net protection of agriculture arrived in the 1930s; and it was reinforced with heavy subsidies in the postwar period.

What about the leader of the industrial pack, Britain? Here the story is a bit more complex since Britain does not begin her industrial revolution as a primary product exporter. Instead, she starts as a net importer of primary products, grains in particular (or what she called "corn"), while exporting manufactures. In this case, the import-competing sector is grain, but its treatment roughly conforms to the historical law emerging. Namely, the import-competing grain sector was heavily protected up to around 1820 following four decades of industrialization; the level of protection persisted, but at lower rates, up to the early 1840s; the 1840s, of course, form an historic benchmark since it was in 1846 that the Corn Laws were repealed, after which Britain opted for free trade. Certainly Britain had reached NIC status by that time; indeed, she was far and away the most industrialized country in the world.

Before we look at the impact of the corn laws on the state of the poor in

Britain during the First Industrial Revolution, it might be useful to dwell a moment on our expectations. On the incomes side, the impact on the poor of a policy which diminishes the terms of trade facing agriculture cannot be unambiguously assessed until we know more about land ownership. In the American North, such a policy served to diminish the incomes of the poor since there were so many small family farms the individuals on which made up a good share of America's poor. In contrast, the same policy (in this case, repeal of the corn laws in the 1840s) directly affected rich landlords at the top of the distribution in Britain, and only indirectly affected their unskilled farm laborers. On the expenditure side, the poor, especially the urban poor, were heavy consumers of the foodstuffs and thus gained by the diminished domestic terms of trade. Thus, the impact of the same terms of trade policy in the two countries was likely to have quite different effects on the poor.

So what was the impact of the Corn Laws during the First Industrial Revolution when inequality was on the rise, and when living standards of the poor were lagging behind? The debates from 1815 to 1846 always posed these issues in distributional terms. The Anti-Corn Law League made it absolutely clear who gained and who lost. Landlords, at the very top of the income pyramid, gained from high rents. Capitalists in manufacturing, somewhere in the middle of the income pyramid, suffered since they had to pay higher nominal wages, their export trade was repressed, and their profits were choked off. Closer to the bottom of the income pyramid, the real wage of urban workers suffered from the "bread tax". The impact on the poorest of the working poor, rural farm laborers, was less clear since the employment impact and the cost of living impact were offsetting. The same ambiguity applied to all workers in the bottom 40%. Debate over these magnitudes has been going on now for a century and a half.

General equilibrium models are clearly the best way to assess the Corn

Laws or any other price twist policy associated with early industrial revolutions. When a five-sector, open-economy model is applied to Britain in the 1830s we get some striking answers (Williamson, 1986b). Table 21 estimates the impact of the Corn Laws where Ricardo's small country assumption is invoked. That is, the domestic price of tradables is determined exogenously by world market conditions and British tariff policy. The counterfactual supposes that the Repeal was passed in the mid 1830s so that the 54% tariff on grains is removed all at once. World market conditions, domestic endowments, and technologies are all held constant.

What would have been the impact of an early Repeal and the elimination of the price twist? Table 21 estimates that 21% of the labor force would have fled agriculture in response to deteriorating employment conditions induced by an early Repeal. This is clearly a large figure, implying that about a fifth of the agricultural labor force would have been made redundant by a movement towards free trade in the 1830s The Anti-Corn Law League argued that the tariffs choked off the supply of labor to manufacturing, that the Corn Laws served to suppress the export of manufactures, and thus that actual industrialization (and thus job creation) was slower that it would have been under free trade. An early Repeal, they argued, would have served to augment the supply of labor to manufacturing, to stimulate exports, and to boost the rate of industrialization. According to the Ricardian small country model, it appears that the League was absolutely correct.

But who gained and who lost from Repeal of the Corn Laws? Certainly landlords and tenant farmers lost a great deal. Table 21 estimates that the agricultural rents would have been cut by 20% by an early Repeal in the 1830s. Who would have gained? The average Briton would have gained very little: early Repeal would have removed the deadweight losses associated with the tariffs, but the gain in real GNP per capita would have been no more than 2%. Like most

Harberger Triangle calculations, this figure is very small. No wonder the debate over the Corn Laws ignored aggregate income effects. Distributional issues were more central.

Table 21 suggests that common labor had a great deal at stake in the debate since the positive effects of removal of the "bread tax" would have swamped the negative employment effects. The net effect of an early Repeal in the 1830s would have been to raise unskilled real wages by about 23%. If this estimate is even close to the mark, it suggests that the Corn Laws help explain why common labor's standard of living lagged behind in the first half of the 19th century. The Corn Laws also appear to have squeezed the distribution in the middle a bit. That is, capitalists in manufacturing suffered modestly. Opponents of the Corn Laws believed that it was laborers and capitalists who were paying the subsidy to grain producers, but it appears to have been mostly the former. It follows that a good share of the rising inequality and lagging living standards of the poor during the First Industrial Revolution may be attributable to the Corn Laws. It may also explain why poor relief was relatively generous up to the 1830s, and why it was oriented towards farm laborers in the South of England.

All of this analysis assumes with Ricardo that the external terms of trade was unaffected by Britain's tariff policy. Torrens disagreed. He thought the tariff improved the external terms of trade enough to overturn these results. However, when the model is expanded to include Torrens' position, unskilled labor at the bottom of the distribution still suffer under the Corn Laws.

Allocation of Public Goods: Social Overhead in the Cities

At the conclusion of Section II, we showed that urban rents rose

dramatically across the industrial revolution and that this had especially damaging effects on the urban poor by raising their living costs. They made an effort to economize on the more expensive housing by crowding into very densely-packed districts. At the same time, municipal authorities and planners found it extremely difficult to cope with the pollution and disamenities generated by the crowding in these rapidly growing cities. Thus, the cities became serious health hazards, so much so that Frederick Engels called them "killers". Indeed, the mortality rate was far higher in the cities than in the coutryside during 19th century industrial revolutions. In contrast, today's cities in the Third World are relatively benign since, if anything, mortality rates are higher in the countryside. Not so in the 19th century, as Table 7 shows for England (and things were no different on the Continent or in America). The death and sickness associated with this ugly enviroment fell most heavily, of course, on the poor and the extreme poor, those worst equipped to escape the environment. Sickness, mortality and poverty are, of course, highly correlated, but how much of this result was simply due to a fact of policy, namely to underinvest in the social overhead of the cities? A very large literature suggests that a good share of it can be attributable to this policy of neglect, for which the urban poor had to suffer.

Let us begin with what may appear to be an extraneous observation, although we think it is central to the story. By the standards of the contemporary Third World and the late 19th century, Britain recorded very modest investment shares in national income. That fact has generated a long and active debate centered around the question: Was the investment share low because investment requirements were modest, or was the investment share low because of a savings constraint? The first argues that investment demand in the private sector was the critical force driving accumulation during Britain's industrial revolution, low rates of technical progress and an

absence of a capital-using bias both serving to minimize private sector investment requirements. The second argues that Britain's growth was savings-constrained. Until very recently, the first view has dominated the literature.

This dominant view sees early 19th century Britain as so labor-intensive that investment requirements to equip new workers could be easily fulfilled by modest amounts of domestic savings, so easily in fact that domestic savings had to look for outlets overseas. Thus, David Landes (1969, pp. 78-79) brushes problems of accumulation aside with one magisterial sweep, leaving him free to deal with technology and private sector entrepreneurship in the remaining 550 pages of The Unbound Prometheus:

> ... however justified this concern with saving and capital may be in this age of costly equipment and facilities [in] abysmally poor would-be industrial economies, it is less relevant to the British experience ... the capital requirements of these early innovations were small...

Phyllis Deane and W. A. Cole (1962, p. 277) and Peter Mathias (1972, p. viii) agree. According to Deane, Cole, Landes and Mathias, the explanation for the modest investment requirements during the British industrial revolution lies with simple labor-intensive technologies, capital-saving innovations, capital-stretching and intelligent exploitation of excess capacity. Contemporary World Bank analysts would find this interpretation attractive since they could use it to support their critique of Third World economies which, it is argued, often adopt inefficient capital-intensive development strategies during their ongoing industrial revolutions, diminishing job creation, and thus hurting the poor.

Where does this benign modest-investment-requirements view come from? The tradition starts in the 1930s with two very influential papers by Michael Postan (1935) and Herbert Heaton (1937), the latter the source of the statement that the initial capital requirements during the industrial revolution were "modest". It turns out, however, that Postan and Heaton restricted their attention to the direct investment requirements of factory production. They ignored the indirect public sector infrastructure requirements, city social overhead in particular. This very narrow window on the industrial revolution tends to blur their vision. Indeed, in the fifty years since Postan wrote his paper, rarely do we hear any mention of housing, infrastructure and social overhead. This is surely a puzzling attribute of the accumulation debate since there is another strand of historical literature which stresses crowding in the cities, a deteriorating urban environment, and lack of public investment in infrastructure (sewers, water supplies, street paving, lighting, refuse removal, and so on). It is also puzzling since we have come to learn just how large such investments loom in typical industrial revolutions, the Third World included. Indeed, many development economists and historians have argued that such investments are essential complements to the plant and equipment set in place in modern industry. Without them, rates of return in the modern private sector may sag and industrialization can be choked off. Dirty and unhealthy cities can serve to drive up the effective price of labor to urban firms either by producing sick workers or by requiring large nominal wage bribes to get reluctant workers to enter the dirty cities. Both would serve to raise the effective cost of labor, choking off industrial profits, accumulation, and job creation.

Second, and more important, the literature has confused what actually was with what should have been. It may be a mistake to conclude that Britain's labor-intensive growth strategy was a Good Thing. Heaton's "modest" investment

requirements may reflect an attempt to achieve an industrial revolution on the cheap. If so, the strategy may have turned out to be more expensive in the longer run.

If investment requirements during the First Industrial Revolution were really modest, it should have been reflected in relatively low capital-output ratios. Table 22 collects the evidence for Britain 1800-1860 and for a number of industrial revolutions that have followed in the wake of the First. While we have the ingredients necessary to calculate both average capital-output ratios (ACOR) and incremental capital-output ratios (ICOR), the late 19th and 20th century estimates are limited to ICORs only. Furthermore, all of the figures in Table 22 are for fixed capital.

Panel A offers provisional support for the modest-investment-requirements view: Britain's ACOR underwent a spectacular drop from 5.21 in 1800 to 3.55 in 1860, the biggest fall by far taking place in the first three decades of the 19th century. No diminishing returns to capital, it appears. Or if there was diminishing returns, it was dominated by capital-saving technical change (von Tunzlemann, 1981, pp. 160-161). At the margin, therefore, Britain's investment requirements during the industrial revolution were far below 18th century averages. Indeed, the economy-wide ICOR up to 1830 was only 2.65, far below Simon Kuznets' ten-country average for the 1950s (Panel B), and even below that for low-income countries in the 1950s and Meiji Japan (the latter viewed by most analysts to have been the classic example of capital-saving development).

In this sense, Deane, Cole, Landes and Mathias are correct: Britain's investment requirements on the margin <u>were</u> modest during the industrial revolution, and they stay modest well into the late 19th century. However, we believe the inferences which they draw from that observation are incorrect.

First, the case for Britain's <u>unique</u> "modesty" of investment requirements

has been overdrawn. Britain's ICOR during the first half of the 19th century was 3.1 (Panel A, total, 1800-1860), above the 2.9 figure for Meiji Japan and not far below the 3.4 figure for low-income countries in the 1950s (Panel B). Furthermore, there is no evidence that Britain's ICOR in manufacturing was any different from that of the contemporary developing countries. While Britain's ICOR was low, to describe her investment requirements as "ashtonishingly small" (Mathias, 1972, p. viii) and concern with saving and capital "less relevant" (Landes, 1969, p. 78) compared to many poor developing countries today is, to say the least, overstating the case.

Second, one of the key reasons why investment requirements during the First Industrial Revolution were so modest is that Britain failed to commit resources to those urban investment activites which, in Landes' (1969, p. 78) words, make industrialization such a costly venture today, and which, in W. Arthur Lewis' (1978, p. 29) words, make contemporary Third World cities so capital-intensive. Investment in housing and public works simply failed to keep pace with the rest of Britain's economy in the first half of the 19th century. One can see this very clearly in Panel A of Table 22. While the total ACOR drops precipitously between 1800 and 1860, the ACOR for the total economy less agriculture, housing and public works actually rises over the same period. While the ACOR outside of agriculture does fall, implying low ICORs and modest investment requirements at the margin, the reason for it is that capital-intensive housing and public works were given short shrift.

Another way of illustrating this point is to examine the behavior of capital stock growth in social overhead -- residential housing plus public works and public buildings. Table 23 documents per annum growth rates in capital stocks per capita (1851-1860 prices). The table's message is clear. Investment requirements during the late 18th century were kept modest simply by allowing the stock of social overhead per capita to fall, contributing,

presumably, to a deterioration in the quality of life for the poor, an item which usually is excluded from conventional measures of output. This growth strategy continued for the first three decades of the 19th century, although not with quite the same intensity. Per capita stocks in public works continued to decline, but dwelling stocks per capita began to rise. The latter did not rise enough, however, to regain the levels of 1760. By 1830, therefore, Britain had accumulated an enormous deficit in her social overhead stocks by pursuing seventy years of industrialization on the cheap. It cost her dearly, as the social reformers were about to point out. Between 1830 and 1860, there is some evidence of catching up in public works -- in part a response to the goading of the social reformers, but the gap in growth rates between dwelling stocks and all other fixed capital per capita increased.

All of this suggests that while actual investment requirements may have been modest during the First Industrial Revolution, they would <u>not</u> have been so modest had investment in social overhead kept pace. In fact, had social overhead investment kept up with all other investment after 1800 -- let alone making good on accumulated past deficits -- the ICOR over the first half of the 19th century would have been in excess of 4, not the "modest" 3.1 actually achieved.

The argument could be sharpened if we could identify which of the investment and capital stock estimates were city-specific. Then we could talk more explicitly in terms of underinvestment in city social overhead. With some plausible assumptions, it appears that we can. Before the evidence from the First Industrial Revolution is explored, consider 20th century industrial revolutions. W. Arthur Lewis speaks to this issue with authority:

> Urbanisation is decisive because it is so expensive. The difference between the cost of urban and rural development

> does not turn on comparing the capital required for factories and that required for farms. Each of these is a small part of total investment, and the difference per head is not always in favor of industry. The difference turns on infrastructure (Lewis, 1978, p. 29).

Indeed, when social overhead (including dwellings) is added to direct capital requirements, the capital-labor ratio in India's cities is about 4.5 times that of her rural areas (Becker, Mills and Williamson, forthcoming, Table 3.1). Similar findings are reported by Lipton (1976, Table 7.1, pp. 442-443).

While Third World are very capital-intensive, Table 24 shows that Britain's cities in the early 19th century were not. Three estimates of the capital-labor ratio are reported in the table. The first is limited to direct fixed capital only. Capital-labor ratios were generally lower in non-agriculture in the first three decades of the 19th century, and they began to exceed agriculture only after the 1830s. Even in the 1850s, however, capital-labor ratios were not much higher in non-agriculture. The second adds housing to direct fixed capital. The third adds the remaining social overhead. In sharp contrast to Lewis's characterization of the Third World, when social overhead is included Britain's cities look no more capital intensive compared with the countryside then when the social overhead is excluded. While urban capital-labor ratios are about 4.5 times rural in India, they were about the same or less in mid 19th century Britain.

Cities are very capital-intensive in the contemporary Third World. Cities were relatively labor-intensive during the First Industrial Revolution. The difference appears to be explained in large part by a remarkably weak commitment to city social overhead in Britain.

City social overhead was low during the First Industrial Revolution. It

lowered investment requirements, perhaps freeing up resources for consumption of foodstuffs and other essential commodities. But it had its price since the cities became ugly, crowded and polluted, breeding high mortality and morbidity especially among the poor. In sharp contrast with the contemporary Third World, and to repeat, Britain's cities were killers: in 1841, city mortality rates were 5.6 per thousand higher than in the countryside (Williamson, forthcoming, Table 2.1); in 1960, Third World cities had mortality rates that were 6.3 per thousand lower than the countryside (Rogers, 1984, p. 288). We simply do not know how much of this stark demographic contrast between 1841 Britain and the contemporary Third World is due to Britain's low investment in city social overhead. Nor are we certain what contribution low investment in city social overhead made to the observed lag of life expectancy behind GNP gains (Fogel, 1986). But surely it mattered.

Evidence such as this invites the inference that more and earlier investment in city social overhead would have lowered mortality and morbidity, while raising the quality of life. But what would it have cost? Would it have been a Good Thing? Was low investment in city social overhead necessarily evidence of underinvestment? The low investment could have been due to any one of the following forces, and they have quite different implications: investment demand for city social overhead may have been low because public health technologies were primitive, or because urban poverty bred low demand for housing; investment demand for city social overhead may have been low because of some capital market failure; investment demand for city social overhead may have been low because of some public sector failure; and investment in city social overhead may have been low due to savings constraints and crowding out by other projects (including those abroad). It isn't obvious which of these forces accounts for Britain's low investment commitment to city social overhead.

Thus, we have no shortage of explanations for the low commitment to city social overhead investment during the First Industrial Revolution. But if Britain underinvested in city social overhead, then we should see it in the form of high social rates of return to such investment. Reformists of that time certainly made the case that the cities were crowded and filthy, and that sickness and death were highly correlated with city ugliness, but to clinch the case for public intervention the reformers had to show clearly that public health investment would yield favorable returns as well as to show which projects should have been favored first. The reformers could not show this in 1842 and modern historians have difficulty showing it today. Indeed, we are not even sure what was driving mortality trends across the 19th century, including the contribution of sanitary reform to those trends. Nonetheless, we do have some suggestive hints.

Thomas McKeown (McKeown, 1976; McKeown and Record, 1962) guessed that public health investments introduced by the sanitary reformers accounted for about a quarter of the mortality decline in the second half of the nineteenth century, but even that brilliant guess has been challenged in subsequent debate. As Fogel (1986, Table 9.1, p. 440) has recently shown, the British standardized death rate declined by 21 points between 1700 and 1980, from 28 per thousand to 7 per thousand, about half of which took place before 1911, and a third in the six decades following 1850. McKeown argued that improved nutrition and sanitation investment were the principal factors accounting for the decline, especially the former (another key wage good for the poor which was rising in relative price prior to the late 1840s, as we have seen). In fact, McKeown and Record (1962, p. 120) suggested that in the second half of the 19th century investment in public health accounted for about a quarter of the decline while the rise in nutrition accounted for about half. Decrowding explained none of the decline, since it failed to take place.

If the impact of public health investment was modest, was it due to inadequate investment, or to a weak impact of public health investment on mortality, or both? We favor the first hypothesis. That conclusion is based in part on the evidence that 18th century public health environmental efforts had recorded considerable success in reducing English mortality. The conclusion is also based in part on Michael Flinn's (1965, p. 52) observation that reformers thought that French public health practice was in advance of the British at the time of the Sanitary Report. Perhaps more to the point, as with Riley's (1987) 18th century English evidence, work by Samuel Preston and Etienne van de Walle (1978) suggests that water and sewage improvements played an important role in 19th century French urban mortality declines. These were concentrated among the water-borne diseases, but they think that cleaning up French cities may have lowered death rates by air-borne disease too since sanitation investments improved nutritional status (Preston and van de Walle, 1978, p. 288). Thus, they conclude that "water support rather than food support systems are the key to understanding trends in urban French mortality" (Preston and van de Walle, 1978, p. 284), quite in contrast with McKeown's characterization of 19th century Britain. In another paper, Preston and Verne Nelson have shown that the mortality changes in late 19th century Britain were quite unusual based on the "normal" cause of death patterns among 48 nations between 1861 and 1964, the high share attributed to tuberculosis in particular (Preston and Nelson, 1974, p. 24).

In 1985, Preston offered one more piece of evidence which suggests that McKeown has exaggerated the role of nutritional intake and living standards, and, by inference, understated the potential impact of public health. Preston estimated the relationship between per capita income and life expectancy for the 1960s and the 1930s, comparing each with limited observations on the 1900s. Across the 20th century at least, income per capita (standard of living

or nutrition intake; improvements can explain at most a quarter of the rise in life expectancy, encouraging the view that omitted variables -- like the rise in public health investment -- can account for at least three quarters. Figure 12 reproduces Preston's exercise for what we believe is an improved data set, and one which is augmented with mid 19th century observations as well. The upward drift in the relationship is fully consistent with Preston's findings, namely a much larger share of the rise in life expectancy from the mid 19th century onwards is due to factors uncorrelated with per capita income, among them, of course, the rise in public health.

What was the social rate of return to investment in public health and cleaning up the cities? A decade or so ago, Edward Meeker (1974) used conventional benefit/cost analysis to estimate the social rate of return to investment in public health in American cities between 1880 and 1910, getting a range between 6% and 16%. Both of these social rates of return exceed private market rates at that time, and Meeker concluded that investment in public health and city social overhead was sound. It also implies, of course, that there was gross underinvestment in these activities even late in the century. It seems likely that it was even higher early in the century in Britain's cities. But if the social rate of return on investment in city social overhead was so high in the 1830s and 1840s, why was the level of investment so low? We have been persuaded by Anthony Wohl (1983) that the explanation lies with failure of two kinds -- capital market failure and public sector failure.

The capital market failure hypothesis is motivated by the evidence that until the passage of various municipal acts over the three decades following 1835, most cities in England found it difficult if not impossible to secure long term finance for social overhead investments. However, the fact that cities were investing so little in social overhead is not enough evidence to

support the capital market failure hypothesis since low demand may have been the source. The public sector failure hypothesis is even more appealing, and recent work on German late 19th century experience with sanitation investment tends to support Wohl's view (Brown, 1988a, 1988b).

In the second half of the century, there were over 1,000 sanitary districts in England and Wales, but neither the 1835 Municipal Corporations Act nor the 1848 Public Health Act had a significant impact on the local groups responsible for health matters. Municipal franchise was based on rateable values, so the electorate was very narrow. In 1861, only 3 percent of the population of Birmingham could vote for members of the town council (and thus influence sanitary investment decisions), while the figure for Leeds was 13 percent. A survey taken in 1886 of about a fifth of the sanitary districts revealed that those administering the public health acts were mainly shopkeepers (30.8 percent of local sanitary officials), followed by manufacturers (17.5 percent), gentlemen (11.8 percent), merchants (8.6 percent), farmers (7.7 percent) and builders (7.6 percent). Most of these, especially shopkeepers and polluting manufacturers, stood to gain from low rates, and this was the main source of town revenues.

While the greatest opposition to the sanitary reforms marched under the banner of "Economy", the word was clearly misplaced. "Opposition to Unfair Taxes" would have been a more accurate banner. According to this view, the public failure lay with an inefficient and unjust tax system. Taxes were assessed on the rental value of property, and "thus a man whose sole income was derived from rents paid much higher rates in proportion to his total income than others" (Wohl, 1983, p. 171). No wonder "the economists" were hostile to sanitary improvements. No wonder there was underinvestment in city social overhead.

Two important developments began to overcome this impass in the 1860s,

although a three decade lag implied enormous social losses due to the public sector failure. The first was general economic growth in the cities which served to augment the local tax base, and thus lower the effective tax rate. The second was more interventionist and the result of central government action; subsidized terms on loans for town improvements from the central government. In the absence of tax reform at the local level, what the central government loan subsidies served to do was to distribute the tax burden more equally. It served, therefore, to create a better match between those who gained from cleaning up Britain's cities and those who paid.

What about housing? From the social reform debates of the 1830s and 1840s to the early 20th century, overcrowding in Britain's cities has received much attention. The pessimists in the standard of living debate felt certain that overcrowding in tenaments and cottages was at the heart of high morbidity and mortality in the cities, and that things had gotten worse from the 1790s to the 1840s. The issue was sufficiently important that overcrowding was highlighted in the 1842 Sanitary Report and in the 1844 Report of Large Towns. It was also central to the 1885 Royal Commission on the Housing of the Working Classes, indicating that little progress had been made on the problem over the four decades from the 1840s to the 1880s. Nor had the problem disappeared by the turn of the century. Indeed, the immense empirical inquiry of the Board of Trade into town cost of living in 1905 was motivated primarily by high rents, housing scarcity, crowding and its impliciations on the health of the poor. In short, qualitative reports such as these suggest that Britain had made little or no progress on decrowding in her cities from the French Wars to World World I.

Modern revisionists have shown that it is simply not enough to point to various manifestations of poverty in making assessments of Anglo-American treatment of their poor. Nor is it enough to point to rapid industrialization

to conclude that either of these two were countries to emulate. Rapid industrialization may have been either too rapid or not rapid enough. To prove the case that Britain or America failed, we have to show that things could have been better with more intelligent policy and more efficient institutions.

The same holds for European and American cities during the industrial revolution. It is not enough to document high city mortality, morbidity, ugliness, pollution, and crowding. We have to show that things would have been better in countries like Britain had authorities pursued more intelligent policy and developed more efficient institutions. While our intuition may support the view of underinvestment in 19th century cities, finding the evidence of failure is a tougher task.

Safety Nets, the Family, and the State

Safety nets obviously matter to the poor. By safety nets, we mean those resources provided by the family, the community, or the state that support individuals during times of economic crisis. Without these safety nets, fluctuations in the incomes of the poor (or in their consumption capacity) will lead to high mortality and social disruption. There is a commonly held myth about the historical evolution of safety nets. The myth has two parts. First, and during early stages of modern economic growth, industrialization and the emergence of markets both undermine a traditional agrarian society wherein the poor, the sick, and the old were all supported by extended families and the local village community That is, in the traditional society the state played no active role. Second, and late in the industrialization process, formal institutions like social security are invented by modern governments which (finally) replace the traditional functions of family and charity in caring for the poor. In between these two stages lies an intermediate phase of development in which the dependence

> on the market increases sharply (given the breakdown of the traditional peasant economy) and in which guaranteed entitlements in the form of social security benefits have yet to emerge (Sen, 1977, p. 56).

Some support for the existence of the second stage of this mythical evolution of safety nets is provided by Lindert's (1989) recent analysis of state-induced post-fisc redistributions, the key examples being the rise of 20th century welfare programs in Europe and North America. Lindert sees two forces driving this event. One is the emergence of mass democracies with broad

political base. The other is the changing position of large median groups within the income distribution. Early 20th century Europe and America, argues Lindert, saw these large enfranchised groups nearer the poor end of the income distribution and much more likely to fall down than climb up. Hence, their support for welfare policies generous to the poor and hard on the rich.

There is some truth to Lindert's story. Certainly the first two thirds of this century has seen an increase in state support of the poor. but this is only half the story. If we accept the myth of a simple two stage path from "traditional" to "modern" safety nets, we will miss a key lesson of history.

The first big error embedded in the myth is its romanticized image of traditional society. The considerable efforts of demographic historians over the past three decades has made it clear that extended family systems were never the norm in Northwestern Europe (Hajnal, 1982), where, after all, the industrial revolution began. Far from undermining the extended family, industrialization may actually have strengthened it. Michael Anderson's (1972) studies of 19th century Lancashire found more old people living with their married children in industrial Preston than in nearby rural areas. The same has been found in industrializing Massachusetts in the 19th century (Harevin and Chudacoff, 19xx). Other studies of household structure may not provide a clear verdict on whether the extended family increased or decreased during the 19th century (for example Wall, 1984), but they do make it clear that the family was not the typical safety net in pre-industrial Britain. Such a finding is hardly surprising. Most parents didn't live long enough to be a burden on their children anyway. As mortality rates fell during the industrial revolution, parents lived longer, giving them a greater opportunity to be supported by their children in old age. And their children, enjoying higher incomes, were better equipped to support them. On the other hand, children could better escape those responsibilities and default on their parents'

investment in them by migrating to labor markets in distant towns at home or abroad (Williamson, 1986a).

There was, however, a safety net in pre-industrial Britain and America that was threatened by 19th century industrialization in both countries, and it was provided by -- much to the surprise, we suspect, of many readers who have been victims of the myth -- the state. From the 17th to the 19th century, "the collectivity rather than the family was the source of security for the individual over the life course" (Laslett, 1985, p. 360). The text of the famous Elizabethan Poor Law Act of 1601 explicitly confirms the responsibility of the state to support the same kind of individuals that were being supported by poor relief in the late 19th century: the old, the disabled, widows, orphans, and large families (Smith, 1981, p. 607). Evidence from four English communities suggests that one out of every five households were on some kind of relief in the 18th century (Smith, 1984, pp. 444-6), and that the generosity of state old-age pensions were in 1834 twice what they were in 1984 and even before Thatcher (Thomson, 1984, pp. 452-3). New York state relief programs at the start of the 19th century, and just prior to the industrial revolution, were as large a share of the state budget as federal welfare programs are in the US budget today (Hannon, 1986, pp. 1-3). So much for the myth that state welfare programs are an invention of modern governments. And so much for the myth that the industrial revolution displaced traditional family safety nets.

The existence of pre-industrial state support systems is explained in part by the absence of extended family networks. Nuclear family systems bring with them nuclear family risks. Formal state relief systems were a means of spreading those risks. But not all the poverty relieved by state intervention in pre-industrial England was attributable to the life-cycle of nuclear families. Nor was the intervention solely restricted to poor relief. Robert

Fogel (1989) has shown that food price intervention was regularly used by the early modern state in England to prevent famine. Like Amartya Sen's work on India, Fogel shifted our attention away from food shortage and towards low price elasticity of food demand. In local grain markets only poorly linked to national markets, prices rose sharply to eliminate excess demand, and in the absence of relief, poor net consumers of food could be forced into starvation. Price intervention muted local famines in pre-industrial England. And later, when food prices soared during the Napoleonic War, the Speenhamland system was created to supplement wages of the poor.

This sympathetic attitude towards poverty and generous safety nets for the poor did not persist after the Napoleonic Wars when the industrial revolution gathered steam. And we see roughly the same swing in attitude and policy in the United States.

The most recurrent argument against poor relief on both sides of the Atlantic was that the poor were to blame for their fate, and that charity and relief merely removed the will to work. There is little sympathy to be found for example in this quotation from an early 19th century British Parliamentary Report on Vagrancy:

> Vagrants have but one object in all their wicked and perverse lives -- to exist without work at the expense of their industrious neighbors. [In all the army of tramps] there is no ... element of honest poverty or of penniless industry ... (quoted in Ford and Ford, 1969, p. 245).

Similarly, the New York Society for the Prevention of Pauperism in 1818 listed the many causes of pauperism as: ignorance, idleness, intemperance, extravagant expenditure, imprudent and hasty marriage, lotteries, pawnbrokers

(who encouraged theft), prostitution, gambling, and the charitable institutions and societies which, despite Christian motives and philanthropic zeal, encouraged laziness, fostered reliance on benevolence, and could never "effect the removal of pauperism nor lessen its general amount" (Hannon, 1986, p. 14).

These arguments were not new even then. The same debates about who were and who were not the "deserving poor" are to be found in medieval writing. The difference is that these hostile views toward the poor this time did not go unanswered. And many who now in the early 19th century opposed the generosity of poor relief or who called for a more stringent "workhouse test" were hardly very subtle in expressing their hostility. The most important proponent of tighter rules in the early 19th century was Malthus himself. Malthus agreed that society had an obligation to support the most needy, especially the old, but he believed that by supporting large families, poor relief encouraged population growth and thus depressed wages. A similar argument has recently resurfaced about English and American 19th century poor laws (Boyer, forthcoming; Hannon, 1986). In its modern guise, labor migration takes the place of fertility and mortality, and implicit contract theory takes the place of Malthusian demographics. But the story is familiar. By offering poor relief to seasonally and cyclically idle farm laborers, out-migration is reduced and labor is made locally available for the seasonal and cyclical peaks. Without such poor relief, employers who needed labor at times of peak demand would have had to offer higher wages and long term contracts. Boyer and Hannon argue that early 19th century poor relief in Britain and America was a way for employers to shift part of the cost of their implicit contracts with their workers onto the state.

Two other arguments used against generous poor relief should be familiar to those who follow contemporary debates over welfare reform. Opponents of

outrelief were constantly worried that relief reduced incentives to work and save. The Victorians appear to have understood the arguments against welfare programs just as clearly as modern economists who have made their names by restating those arguments. Indeed, in proposing workhouse tests to determine the needy, one could argue that the Victorians were more subtle in handling the welfare trade-off than are those who call for savage cuts in welfare programs today.

Victorian opponents of poor relief also argued that it was socially damaging in that it undercut family and charitable responsibility. Nineteenth century writers also believed the myth that the family supplied support for the needy in the pre-industrial age. By cutting poor relief, they thought the mythical golden age would resurrect itself. It was both odd and inconsistent that the champions of self-reliance, who argued for a reduction of poor relief, also called for a restoration of "traditional" safety nets (Crowther, 1981).

Opponents of relief were eager that benefits should not become an entitlement or a right of the poor like, for example, trial by jury. The myth that state benefits were a recent substitute for extended family support and private charity helped to support the myth that formal benefits were not a "traditional" expectation. Many proponents of relief, however, did see them as an entitlement. Indeed, local authorities in both Britain and America were obliged to provide some form of relief although often limited to the workhouse. The poor themselves seem at times to have felt that a right was being violated when relief was cut or when laissez-faire policies of non-market-intervention were pursued during times of high prices and low wages (see especially, Thompson, 1971). Contemporaries were not unaware that these laissez-faire policies and reductions in poor relief, both of which coincided with industrialization, represented transfers of entitlements from the poor to the

rich.

The main swings in attitudes towards poor relief and poverty were as follows. Toward the start of the 18th century there was an attempt to tighten the workhouse test. In response to heightened seasonal unemployment (in the wake of enclosure and crop mix changes) and to high food prices (in the wake of the Napoleonic Wars), poor relief became more generous by the end of the century (Rose, 1971, Chp. 1). The first part of the 19th century saw the emergence of an increasing concern about outrelief to the ablebodied as well as the generosity of that relief. The debate became heated on both sides of the Atlantic. It culminated with the passage in 1824 of a tougher New York State poor law and by a tougher New Poor Law in England in 1834. Both laws aimed to restrict outdoor relief. In the 1870s, again on both sides of the Atlantic, there was a so-called crusade against outrelief (Hannon, 1984a, 1985, 1986; MacKinnon, 1987). During this period, outrelief was cut for many disadvantaged groups including widows and the elderly. Late in the century, we see some loosening up and an increased interest by social reformers in the poor, the most famous of which being Booth and Rowntree. While both attributed a great deal of poverty to the actions of the poor, they found much more "innocent" poverty than others had believed existed.

The 1900s are often seen as laying the foundation of modern welfarism. By 1914, England had old age pensions, some public "make-work" schemes, and less harsh attitudes towards the poor. This liberal surge around World War I ushered in what Lindert identifies as a widespread shift in attitudes among the NICs of that time, that is, the rise of redistributive schemes that had a significant impact on post-fisc income distributions. We should not forget, however, that the rise of the 20th century welfare state represents a return to the more liberal attitudes towards the poor in pre-industrial Europe and America. It was only during the interim that 19th century industrializing

nations retreated from those liberal attitudes.

What was the effect of the less generous relief in Victorian England? For much of the poor, it is hard to say. We can be fairly sure, however, that the old were made much worse off. Figure 13 shows old-age pensions as a percent of working-class adult incomes (Thomson, 1984, p. 453). The sharp decline in old age support in the 1870s was large enough to imply an absolute fall in the income of the elderly. Perhaps in the long run the response would have been later retirement and an increase in saving -- as hoped for by Victorian and modern opponents of social security, but that would not have helped those already old. Indeed, there was a marked increase in the proportion of those over 65 in the workhouse during the 1870s and a similar increase in the ratio of inside to total non-ablebodied paupers (a group that includes the old) in the same period. Thomson (1983) found that more old people entered the workhouse and many more of those who entered never left (but died there). MacKinnon (1984, p. 328) calculates that had there been no crusade against outrelief, there would have been 200,000 more old people given some outrelief in 1900, and the average working-class old person's income would have been 8% higher. Recall that the elderly represented a large portion of the extreme poor, and they may have been falling further behind in the late 19th century as secondary and craft employment possibilities disappeared. While policy had a powerful negative impact on the elderly poor in the 1870s, it had an equally powerful positive impact in the early 20th century. Following the introduction of old age pensions in 1911, by 1913 outdoor pauperism among the elderly had fallen to 5% of its 1906 level.

What have we learned about safety nets? While it may be convenient to think otherwise, typically the poor in pre-industrial European and North American societies were <u>not</u> supported by the family and private institutions. In most leading 19th century industrializers, a large part of the

responsibility lay with the state and other formal, state-like institutions. These bodies intervened in food markets and their interventions mattered to the living standards of the poor. Where laissez-faire policies were adopted during the industrial revolution, as in America and England, many of the poor were big losers. The removal of traditional pre-industrial safety nets by laissez-faire-driven 19th century industrial revolutions was viewed by many as the theft of what had come to be seen as a property right. We do not yet know by how much this "theft" hurt the poor, but it clearly mattered to those in extreme poverty at the bottom of the income distribution.

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Table 1. Conjectures on British Income Inequality Trends, 1688-1913

Date of original observation	Gini coefficient	Income Shares (%)					Atkinson Index		
		Bottom 40%	40-65% group	65-90% group	Top 10%	Top 5%	ε = 1.5	ε = 2.5	ε = 4.0
England and Wales									
1688	0.468	15.4	16.7	26.0	42.0	27.6	0.393	0.491	0.569
1759	0.487	15.8	14.1	25.8	44.4	31.2	0.399	0.474	0.531
1801/3	0.519	13.4	13.3	28.0	45.4	29.8	0.450	0.542	0.607
1867	0.551	14.8	11.7	20.8	52.7	45.1	0.473	0.523	0.562
United Kingdom									
1867	0.538	15.2	32.4		52.4	46.8	0.464	0.510	0.547
1880	0.520	17.0	28.8		54.2	49.4	0.462	0.502	0.532
1913	0.502	17.2	33.0		49.8	43.8	0.427	0.475	0.522

Source: Williamson (1985), Table 4.5, p. 68.

Table 2. Wealth Inequality in the United States, 1774-1962

	Share held by Top 1%	Share held by Top 10%	Gini Coefficient
1774			
Free households	12.6%	49.6%	.642
All households	14.8	55.1	n.a.
Free adult males	12.4	48.7	.632
All adult males	13.2	54.3	n.a.
1860			
Free adult males	29.0	73.0	.832
Adult males	30.3-35.0	74.6-79.0	n.a.
1870			
Adult males	27.0	70.0	.833
1962			
All consumer units	15.1	35.7	n.a.

Source: Williamson and Lindert (1980), Table 3.1, pp. 38-39.

Table 3. Expenditure Shares of Urban Poor in the 19th Century

Item	Expenditure Shares (%) for:			
	Food	Rent, Fuel, & Lighting	Clothing	Other
Massachusetts unskilled city poor in 1875: Williamson & Lindert, 1980, p. 107	68.9	20.6	4.1	6.4
London unskilled city poor, 1795-1845: Williamson, 1985, p. 210	63.8	23.2	13.0	-
Late 19th Century Northampton, England: Bowley and Burnett-Hurst, 1915, p. 24.				
Weekly earnings under 10 shillings		44		
10-15		40		
15-20		23		
20-25		20		
25-30		20		
30-35		20		
35-40		17		
40-45		15		
45-50		14		
50-55		13		
55-60		10		
60+		8		

Table 4. Cost-of-Living in American Eastern Cities, 1820-1839 by Socioeconomic Class (1820 = 100)

Year	Unskilled Poor / Rich
1820	100.0
1821	99.5
1822	104.1
1823	104.7
1824	108.7
1825	103.2
1826	103.2
1827	104.2
1828	103.5
1829	104.6
1830	100.8
1831	104.2
1832	104.4
1833	103.1
1834	100.6
1835	102.0
1836	111.7
1837	109.1
1838	109.1
1839	110.5

Source: Williamson (1976), p. 315

Table 5. The Terms of Trade in Britain Between Food and Textiles, 1820-40

Year	Food Price Index	Textile Price Index	Food / Textiles (1820=100)
1820	148.8	374.9	100.0
1821	131.3	363.5	91.0
1822	117.3	326.7	90.4
1823	128.6	302.3	107.2
1824	143.8	295.8	122.5
1825	154.8	298.0	130.8
1826	138.9	253.4	138.1
1827	134.8	245.0	138.6
1828	137.9	231.9	149.8
1829	142.9	205.5	175.2
1830	139.1	209.4	167.3
1831	142.7	198.4	181.2
1832	134.0	176.5	191.2
1833	120.8	176.2	172.7
1834	111.1	179.5	155.9
1835	103.1	194.5	133.5
1836	122.5	192.5	160.3
1837	130.3	166.1	197.6
1838	143.3	157.0	229.9
1839	152.7	155.0	248.2
1840	150.2	140.7	268.9

Source: Data underlying Lindert and Williamson (1983).

Table 6. Trends in English City Rents 1790-1840
(percent per annum growth)

	Period		
	1790-1839/40	1790-1839/42	1800-40
Black Country Town Rents			1.7%
Leeds Rents			
Demand side estimate	2.0%		
Supply side estimate	3.6		
Average	2.8		
Trentham (Staffs) Rents		2.9%	
Cost-of-Living	0.3	0.3	-0.9
Rents Relative to Cost-of-Living	2.5	2.6	2.6

Source: Williamson (forthcoming), Table 9.1.

Table 7. Infant Mortality Rates in England's Cities and Countryside, 1841, 1871, and 1906 (deaths per 1000)

Region	1906	1871	1841
North			
Benign Countryside	145.3	156.1	114.8
Ugly Cities	148.8	212.1	174.5
Difference	+3.5	+56.0	+59.7
York			
Benign Countryside	138.9	163.5	138.3
Ugly Cities	149.5	189.4	171.7
Difference	+10.6	+25.9	+33.4
Lancs-Cheshire			
Benign Countryside	143.4	172.3	154.7
Ugly Cities	164.1	195.6	198.2
Difference	+20.7	+23.3	+43.5
Midlands			
Benign Countryside	116.8	124.9	137.0
Ugly Cities	145.4	193.2	190.2
Difference	+28.6	+68.3	+53.2
East and South			
Benigh Countryside	110.5	154.3	129.8
Ugly Cities	133.0	170.9	173.2
Difference	+22.5	+16.6	+43.3

Source: Williamson (forthcoming), Table 9.3.

Table 8. Regression Results: English Pauperism and Poverty in 1899

Regression

(1) Linear		(2) Log Linear	
Dependant Var:	ASOP	Dependent Var:	LOG ASOP
	Coefficient (S.E.)		Coefficient (S.E.)
Constant	0.0684	Constant	-1.2740
LOWINC	0.2841 (0.1192)	LOGLOWINC	1.5433 (0.4392)
INRAT	-0.1433 (0.0817)	LOGINRAT	-0.2094 (0.1448)
LOINRAT	0.0369 (0.0758)	LOGLONINRAT	-0.3905 (0.3905)
R Squared:	.4193		.5433
Number of observations:	28		28

Notes:

ASOP: The adjusted number of old outdoor paupers in the sample area divided by total old population. The report only gives the number who had ever been on relief. We used the difference between the number on low income considered ineligible for relief. This number is always the same or slightly below the number ever on relief. It excludes those who had been on relief but were no longer poor. ASOP was very closely correlated to outdoor relief ratios in the corresponding union.

LOWINC: The number of old in the sample with weekly income below 10s. divided by the number whose incomes were known.

INRAT: The number of old indoor paupers divided by total old paupers in the corresponding poor law union in 1903.

LONINRAT: A dummy for London multiplied by INRAT to correct for metropolitan high indoor ratios due to hospitals etc.

Table 9. Local Relief Recipients per 1000 Population, New York State, 1835-1895

Year	New York State	N.Y. City	Rest of State
1835	18.69	84.03	8.73
1840	25.17	88.11	5.27
1846	38.51	146.43	18.93
1850	42.26	97.47	29.13
1855	65.04	160.61	39.73
1860	65.93	138.42	42.33
1865	81.10	233.98	39.95
1870	51.50	85.43	40.96
1874	68.49	130.68	47.77
1880	55.03	124.79	28.79
1885	39.84	86.72	22.42
1890	35.21	64.74	21.59
1895	35.07	54.03	26.96

Notes: There is no figure for 1845. The figures for 1875 are out of line with the neighboring years. They are 101.43; 253.40; and 53.38 respectively.

Source: Hannon (1986), Appendix A, pp.9-10.

Table 10. County Pauper Statistics, England & Wales, 1803-4

Region	Total Paupers per Population	Indoor/Total Paupers
England and Wales	11.4%	8.0%
"Industrial Counties"	9.5%	10.9%
"Agricultural Counties"	16.1%	7.7%
"Industrial counties" excluding Middlesex and Surrey (i.e. London)	9.8%	7.2%

Note: "Agricultural and Industrial" are as defined in the original Parliamentary Papers. Williams (1981), p. 150-1.

Table 11. Pauper Rates by Urbanization, England and Wales

Region	Total Paupers per 1000 in 1906
London	29.83
Other Wholly Urban	25.33
Mixed Urban-Rural:	
> 75% Urban	22.98
50-75% Urban	23.29
25-50% Urban	25.46
< 25% Urban	26.74
Wholly Rural	24.28

Source: These figures are corrected for sex and age constitution of the population. P.P. (1910), Vol. LIII, Cd. 5077, Appendix XXV. Vol. LIII, p. 390.

Table 12. Percentage of Working-Class Households Below Rowntree's Poverty Line

Reading	23.3%
Warrington	13.4
York	12.7
Northampton	8.9
Bolton	7.6
Stanley	6.0

Source: Hennock (1987), p. 225.

Table 13. Trends in Old Age Pauperism, England and Wales, 1851-1911

Year	Adult Non-Able Bodied Paupers as a Percentage of All Paupers	Indoor Paupers Aged Over 65	
		As a % of Age Group in Population	As % of All Paupers
1851	42.1	3.0	19.8
1861	43.0	3.2	23.4
1871	41.6	3.6	26.0
1881	44.1	-	-
1891	46.8	4.3	32.6
1901	48.7	5.0	36.5
1911	42.2	4.4	31.7

Source: Williams (1981), pp. 204-5.

Table 14. Breakdown of Child Paupers, England and Wales, 1908

Item	Proportion of all Pauper Children
Children aged < 16 with:	
married couples	22.1%
widowers	1.3
married men without wives	2.2
widows	43.0
married women without husbands	8.8
mothers of illegitimates	2.9
Orphans and deserted children	19.7
	100.0
Children as a proportion of all paupers:	29.2%

Source: Calculated from data in P.P. (1910), LIII, App XXV, p. 32.

Table 15. Ratio of Female Pauper Rates to Male Pauper Rates, England and Wales, 1906

Age Groups	Ratio of Pauper Rates
16 to 20	1.30
20 to 25	1.46
25 to 35	1.77
35 to 45	1.92
45 to 55	1.32
55 to 60	1.09
60 to 65	1.19
over 65	1.23

Note: This table is not the gender ratio of numbers of paupers in each age group. The ratio of the number of paupers in each sex and gender group to the total size of that group in the population has first been calculated. The table shows the gender ratio of these pauper rates. Calculated from data in P.P. (1910), LIII, App. XXV, p.56.

Table 16. Pauperism among Widows and Children, England and Wales, 1870s and 1880s

Column A: Able-bodied widows with dependent children aged less than 16 on outdoor relief as a percentage of all paupers.

Column B: Able-bodied widows from column A as a percentage of all widows aged 20-45.

Column C: All pauper children as a percentage of all paupers.

Column D: Children per pauper widow.

Year	A	B	C	D
1841	13.5	--	--	2.6
1851	21.0	39.2	38.6	2.4
1861	19.6	34.6	36.2	2.5
1871	19.8	36.0	36.2	2.6
1884	20.7	22.9	33.3	2.9
1891	18.8	20.7	30.4	2.9
1901	16.5	18.6	26.4	2.9
1911	14.3	19.9	28.7	2.8

Notes: The 1841 figures are counted in a slightly different way but Williams believes that they are compatible. Cols A. and B. are 1872. Col C. is 1886. Col B. uses 1881 census data for denominator. Williams (1981), pp. 197-201.

Table 17. Principal Immediate Causes of Poverty in Five English Towns (% of Poor Households Below Rowntree Standard)

Immediate Cause	Northampton 1913	Warrington 1913	Bolton 1914	Reading 1913	York 1899
Chief wage earner:					
Dead	21	6	35	14	27
Ill or old	14	1	17	11	10
Unemployed	-	3	3	2	3
Irregularly employed	-	3	6	4	3
Chief wage earner regularly employed					
but					
Wages insufficient for 3 children					
Families of:					
3 children or less	21	22	20	33	
4 children or more	9	38	9	15	57
Wages sufficient for 3 children but 4 children or more in family	35	27	10	21	
Total	100	100	100	100	100

Sources: Bowley and Burnett-Hurst (1915), p. 408. Bowley and Hogg (1925), p. 158.

Table 18. Examples of Rates of Male Pauperism in Various Industries, England and Wales, 1906

Occupation Groups	Total Adult Male Paupers Occupied and Formerly in the Sector in 1905, per 10,000 Adult Males Occupied in the Same Sector in 1901
General Laborers, etc.	848.6
Fishing	403.3
Agriculture	397.3
Dress, etc.	239.6
Building, etc.	220.7
Mines, etc.	168.1
Metals, etc.	139.8
Textiles	129.0
Chemicals, etc.	79.6
Professional Occupations and Subordinate Services	41.2
Defense	33.9
Commercial Operations	51.2
Average England and Wales	213.0

Source: P.P. (1910), LII, p. 113.

Table 19. Characteristics of Local Relief Recipients, New York State, 1843-1874
(Five year averages)

Percent	1843-44	1845-49	1850-54	1855-59	1860-64	1865-69	1870-74
Adult	76.13	88.74	79.83	86.83	90.89	91.06	86.47
Children	23.87	11.26	20.17	13.17	9.11	8.94	13.53
Male	58.72	56.76	51.60	46.28	40.47	42.29	55.08
Female	41.28	43.24	48.40	53.72	59.53	57.71	44.92
Native born	50.83	43.15	39.02	41.65	39.15	38.97	37.23
Foreign born	49.17	56.85	60.98	58.35	60.85	61.03	62.77
Disabled	9.20	9.67	4.77	2.73	2.59	2.77	5.91
Elderly	5.18	2.71	3.09	1.85	1.50	1.44	3.46
Sick	19.71	24.32	13.59	9.05	7.12	9.78	19.30
Spouse	0.57	2.60	4.54	2.91	2.26	2.06	6.51
Able-bodied adult:	41.46	49.40	53.83	70.30	77.19	75.00	51.29
Male	24.97	28.92	27.26	29.57	28.48	29.59	27.93
Female	16.49	20.48	26.57	40.73	48.71	45.41	23.36
Intemperate	26.44	18.63	11.29	8.41	8.88	10.36	19.47
Debauched	2.65	1.99	1.06	0.51	0.61	0.50	1.23
Idle and vagrant	1.52	1.44	3.66	3.70	2.52	0.82	1.75
Indigent and destitute	10.85	27.34	37.82	57.68	65.18	63.32	28.84
Other	0.00	0.02	0.01	0.00	0.22	0.01	0.00

Source: Hannon (1986), p. 97

Table 20. Female Pauper Rates in Various Industries, England and Wales, 1906

Occupation Group	Female Paupers Over Age 16 Occupied or Formerly Occupied in the Industries Mentioned in the First Column in 1906, per 10,000 Females over 15 Occupied in the Same Industry in 1901	Absolute Number of Female Paupers in Group
Domestic Offices or Services[1]	592.5	98,101
Agriculture	688.6	3,923
Textiles[2]	193.9	11,926
Dress	356.7	27,649
General Undefined Workers and Dealers[3]	1081.1	4,761
Average England and Wales	300.0	-
Total England and Wales	-	200,697

Notes: [1]In this group, 76% of the paupers were either charwomen or laundry and washing services.
[2]Despite the dominance of cotton, wool, worsted and silk, 40% of the paupers in this group were listed as other textile manufacture.
[3]66% of the paupers in this group were listed as "costermongers, hawkers and street sellers".

Source: P.P. (1910), LIII, pp. 114, 416.

Table 21. Estimating the Impact of an Early Repeal of the Corn Laws Under Ricardian Small Country Assumptions

Employment (Unskilled)	
Agriculture	-21%
Industry	+6
Output (Constant Price)	
Agriculture	-6
Industry	+4
Rents, Profits, Wages and GNP	
Agricultural Rents	-20
Profits in Industry	+1
Real Unskilled Wage	+23
Nominal	-1
Workers' Cost-of-Living	-25
Real Skilled Wage	+15
Nominal	+1
Workers' Cost-of-Living	-14
Real GNP Per Capita	+2

Source: Williamson (1986), Table 3.

Table 22. Average (ACOR) and Incremental (ICOR) Capital-Output Ratios: Britain 1800-1860 Compared with Other Industrial Revolutions

PANEL A

Britain: ACOR	1800	1830	1860
Total	5.21	3.81	3.55
Agriculture	5.93	4.69	3.72
Industry, commerce & transport	3.27	2.58	3.29
Total less agriculture	4.87	3.54	3.52
Total less agriculture, housing & public works	2.15	1.90	2.47

Britain: ICOR	1800-1830	1830-1860	1800-1860
Total	2.65	3.32	3.10
Industry, commerce & transport	2.19	3.86	3.30
Total less agriculture housing & public works	1.74	2.94	2.54

PANEL B

20th Century: ICOR	1950s	1885/89-1914/18
Total: Ten countries	4.1	
Total: Low-income countries	3.4	
Total: Japan		2.9

PANEL C

Late 19th Century: ICOR	Period	ICOR
Germany	1851/55-1911/13	7.4
Italy	1861-1914/16	9.6
Denmark	1870-1914	3.9
Norway	1865-1910/19	6.3
Sweden	1861-1911/20	4.1
Unweighted average		6.3
UK	1851/61-1905/14	4.1

Source: Williamson (forthcoming), Table 10.1.

Table 23. Capital Stock Growth Per Capita by Use: 1760-1860
(percent per annum)

Use	1760-1800	1800-1830	1830-1860	1800-1860
Social overhead capital	-0.13	0.10	0.39	0.24
Dwellings	-0.13	0.12	0.27	0.19
Public works & buildings	-0.10	-0.09	1.43	0.67
All other fixed capital	0.44	0.27	1.43	0.85
Total fixed capital	0.21	0.21	1.09	0.65

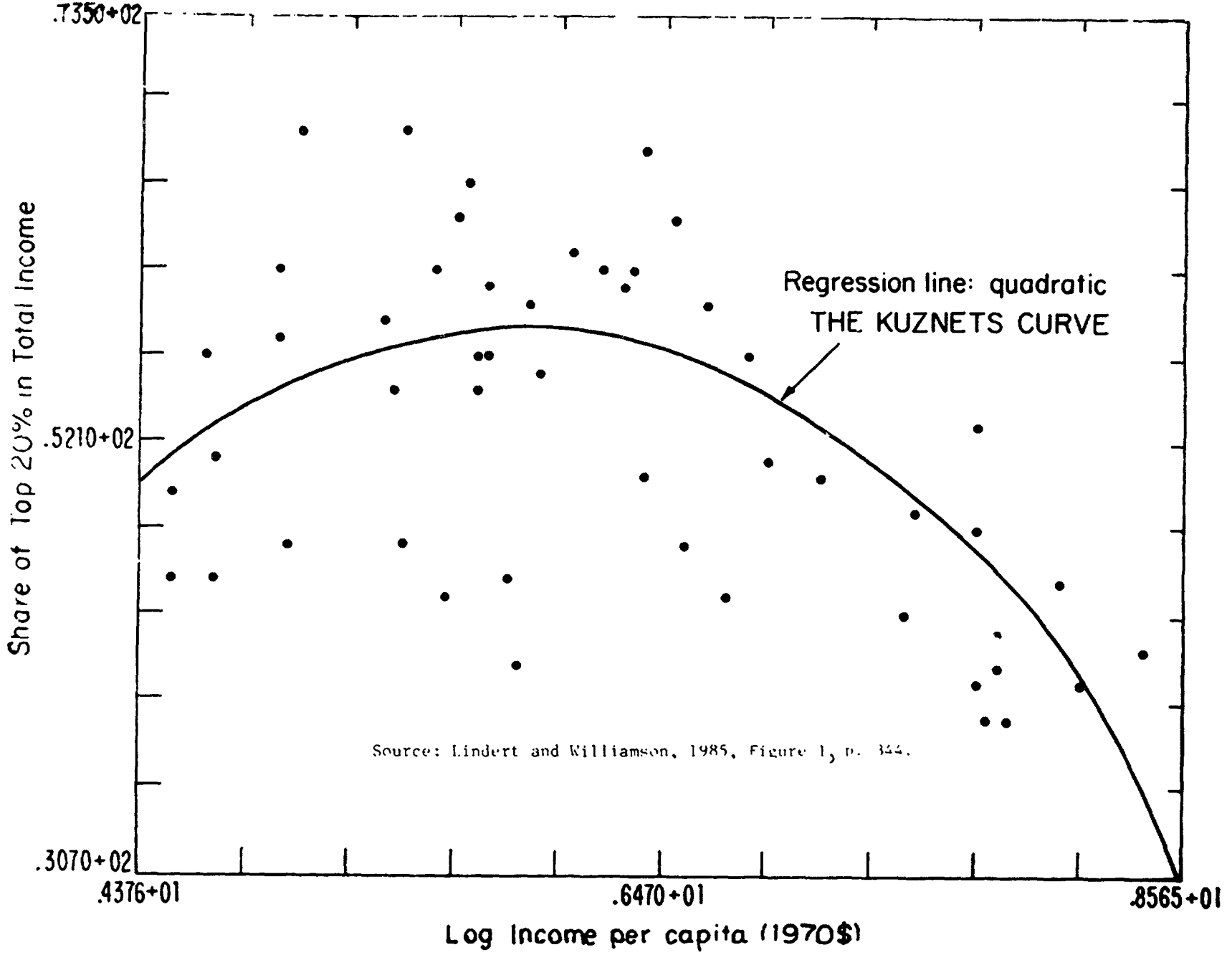
Source: Williamson (forthcoming), Table 10.2.

Table 24. Were Britain's Cities Labor-Intensive? Capital-Labor Ratios, 1800-1860

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Direct Fixed Capital			Direct Fixed Capital Plus Housing			Total Fixed Capital		
Year	Agriculture £	Non-Agriculture £	Ratio (2)/(1)	Agriculture £	Non-Agriculture £	Ratio (5)/(4)	Rural £	Urban £	Ratio (8)/(7)
1800	63.5	67.7	1.07	108.4	81.7	.75			
1810	66.1	65.9	.99	113.7	80.5	.71			
1820	72.8	60.9	.84	128.6	75.9	.59			
1830	76.1	65.5	.86	145.3	82.7	.57			
1840	76.8	82.1	1.07	157.2	102.2	.65	172.5	94.0	.54
1850	77.6	98.9	1.27	151.4	117.9	.78	178.4	106.5	.60
1860	90.0	110.4	1.23	179.7	128.4	.71	211.3	117.0	.55

Source: Williamson (forthcoming), Table 10.3.

FIGURE 1. The Kuznets Curve from the 1960s and 1970s



Source: Lindert and Williamson, 1985, Figure 1, p. 344.

FIGURE 2. Income Inequality Among the NICs Then and Now: Contemporary Korea and Brazil Compared with Four European Nations Around WWI

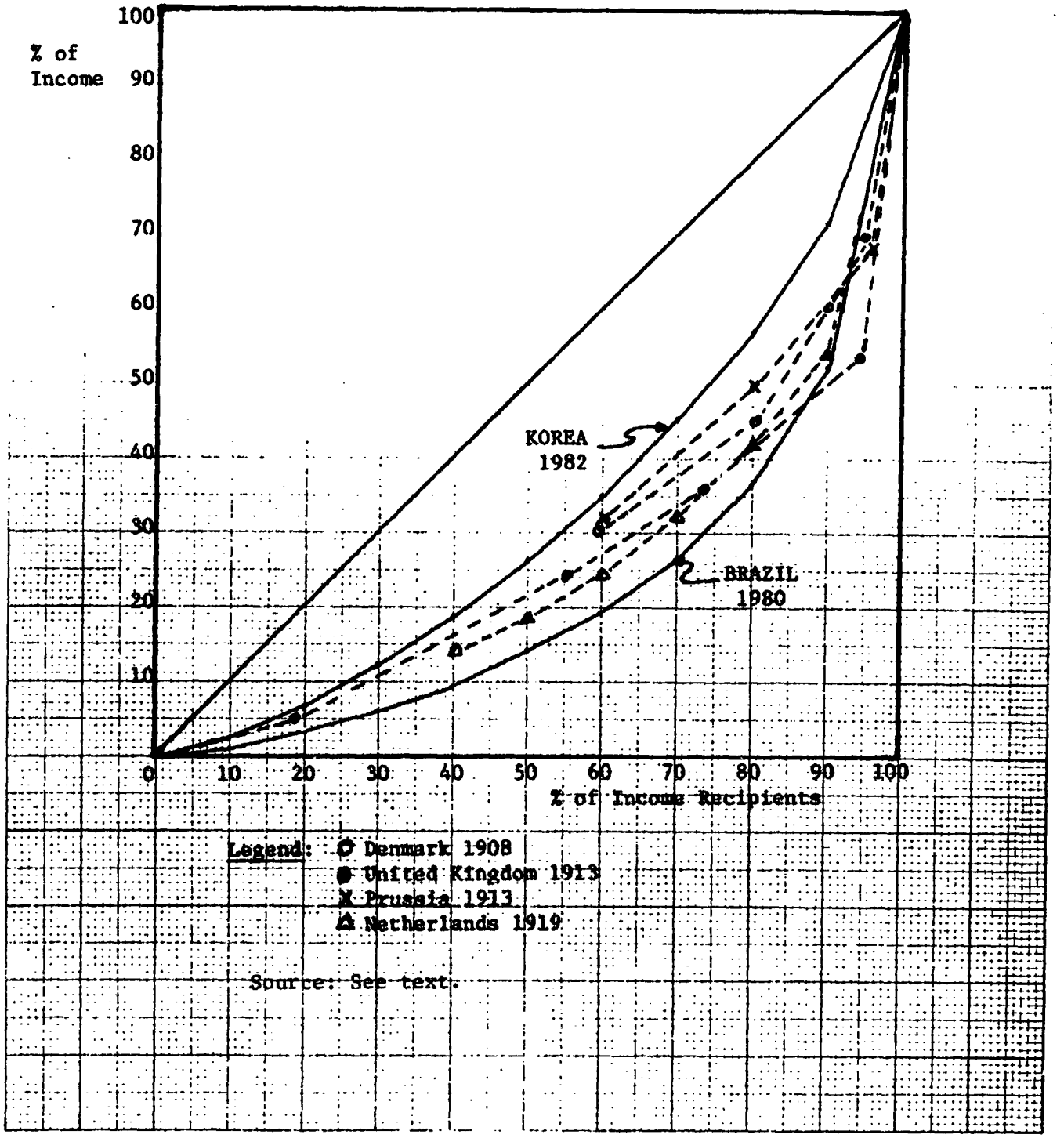


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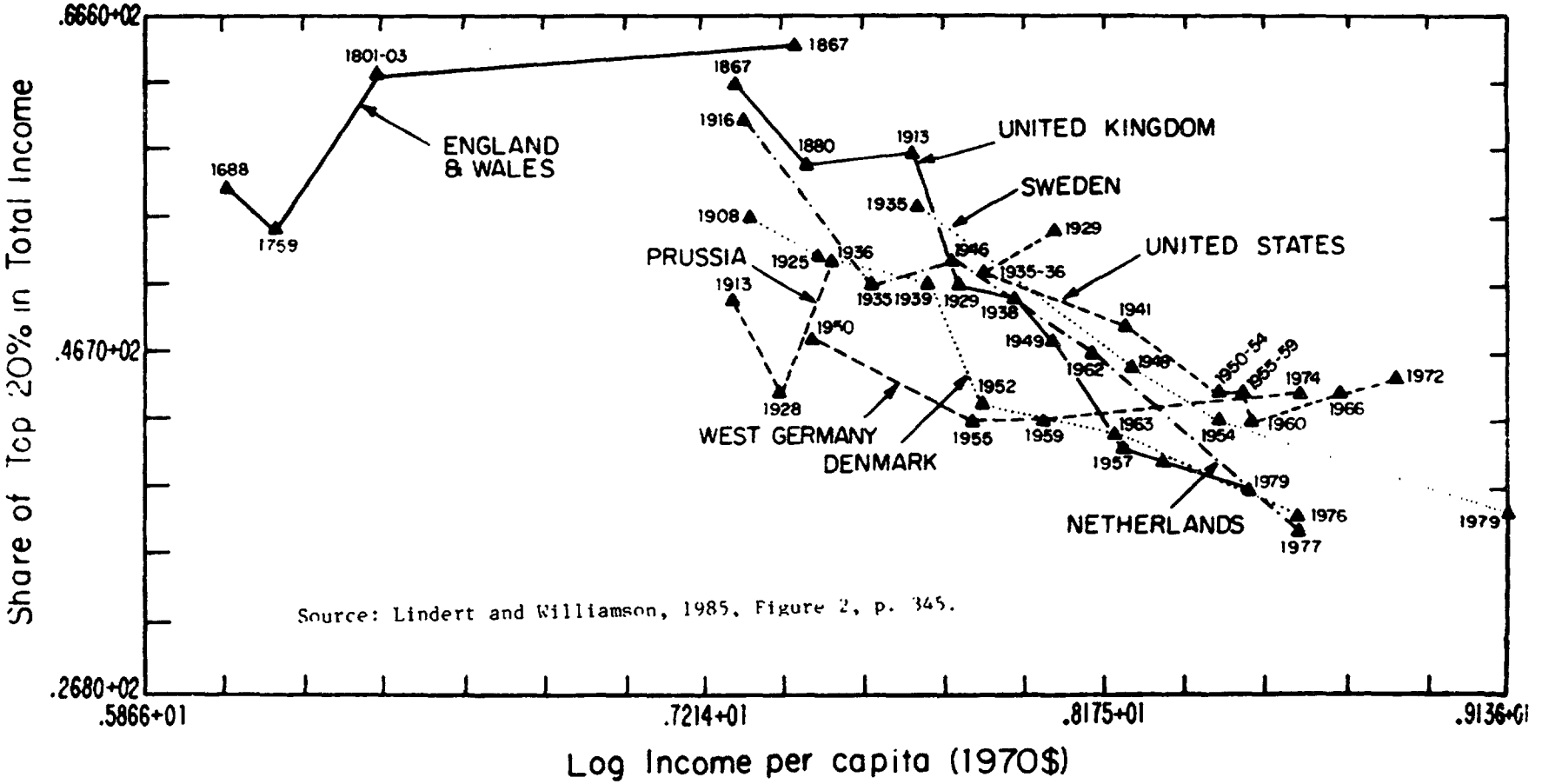
FIGURE 3. The Kuznets Curve: Mostly the 20th Century Downswing



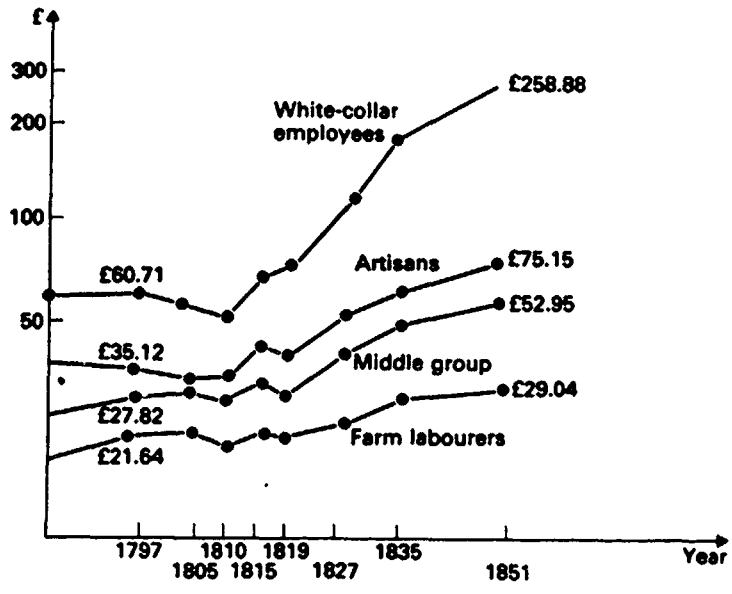


Figure 4. Average Full-Time Earnings for Adult Male Workers in Britain, 1797-1851, at Constant Prices

Source: Williamson, 1985, p. 18.

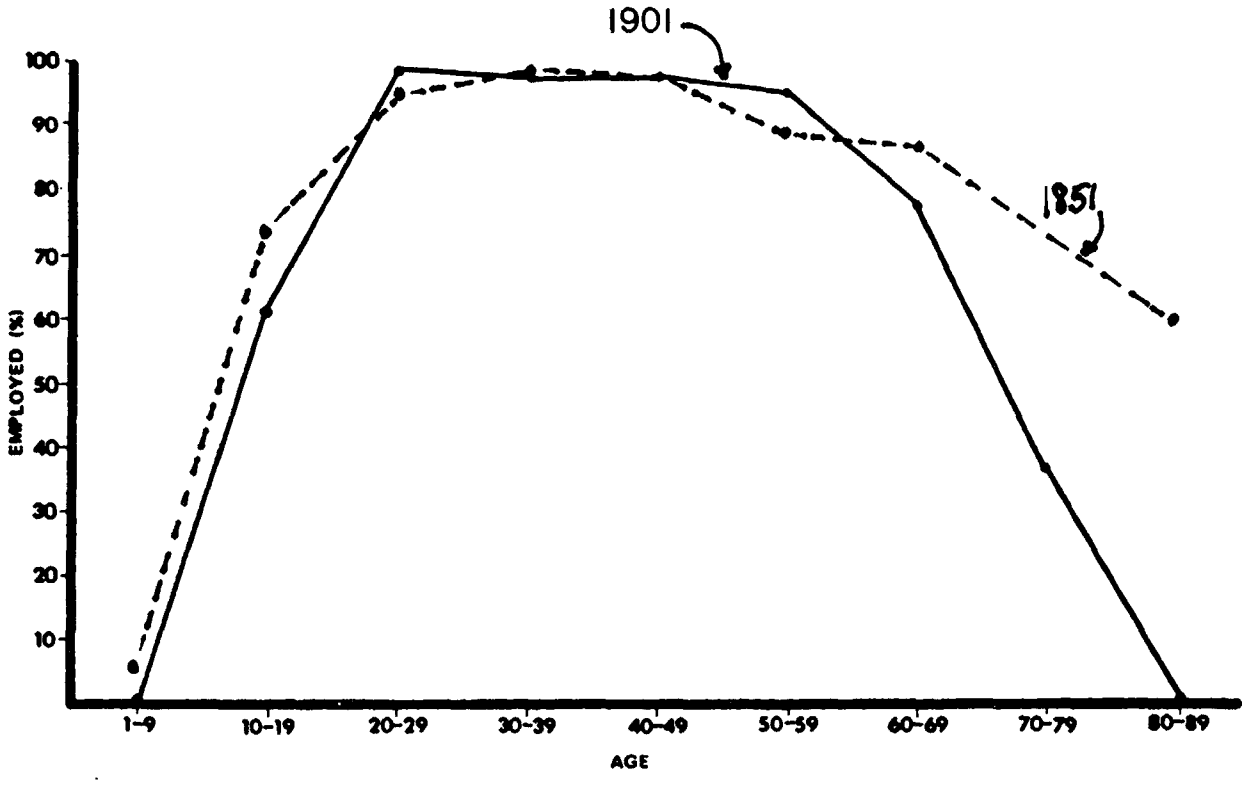


Figure 8. Life Cycle Employment Patterns of Males in Chilvers Coton in 1851 and 1901

Source: Quadagno, 1982, pp. 78-9.

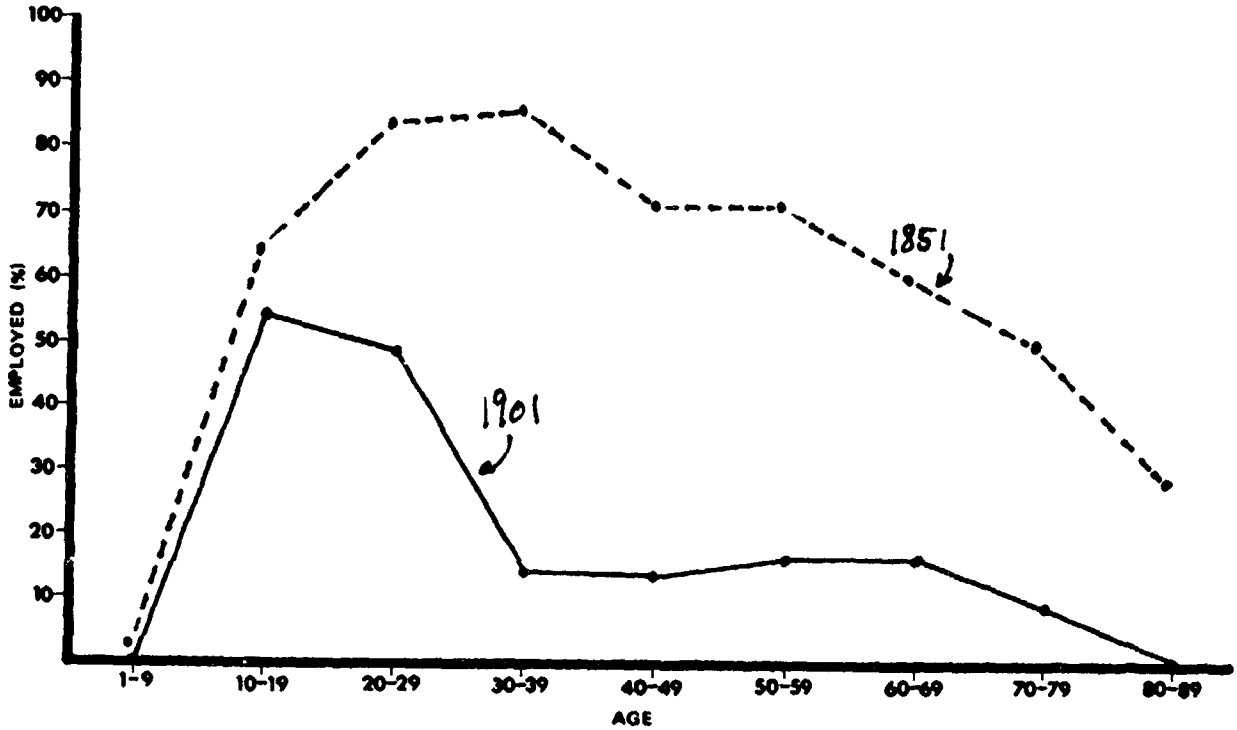


Figure 9. Life Cycle Employment Patterns of Females in Chilvers Coton in 1851 and 1901

Source: Quadagno, 1982, pp. 72-3.

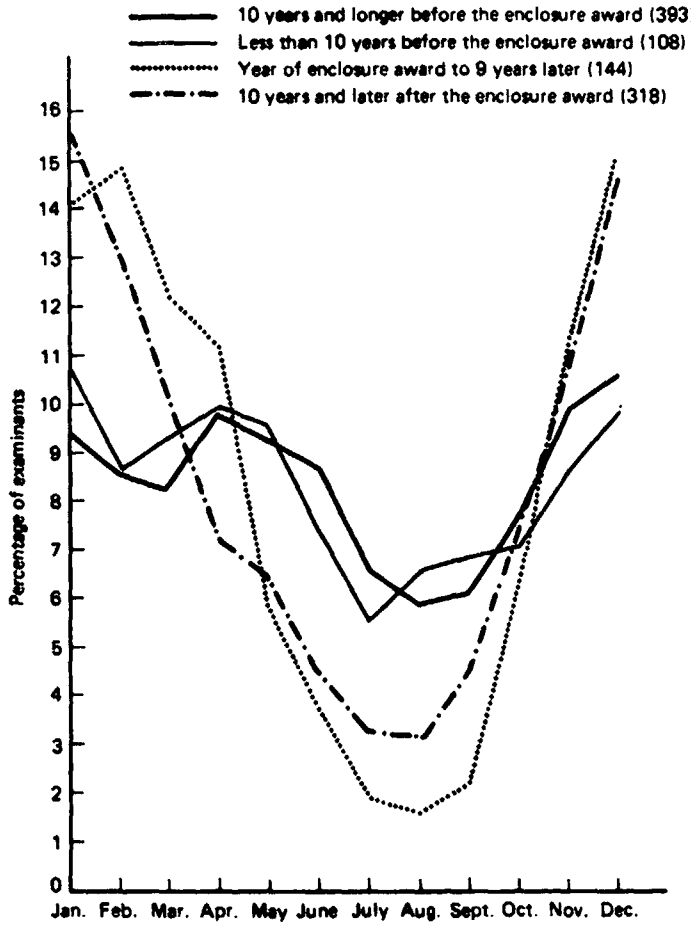
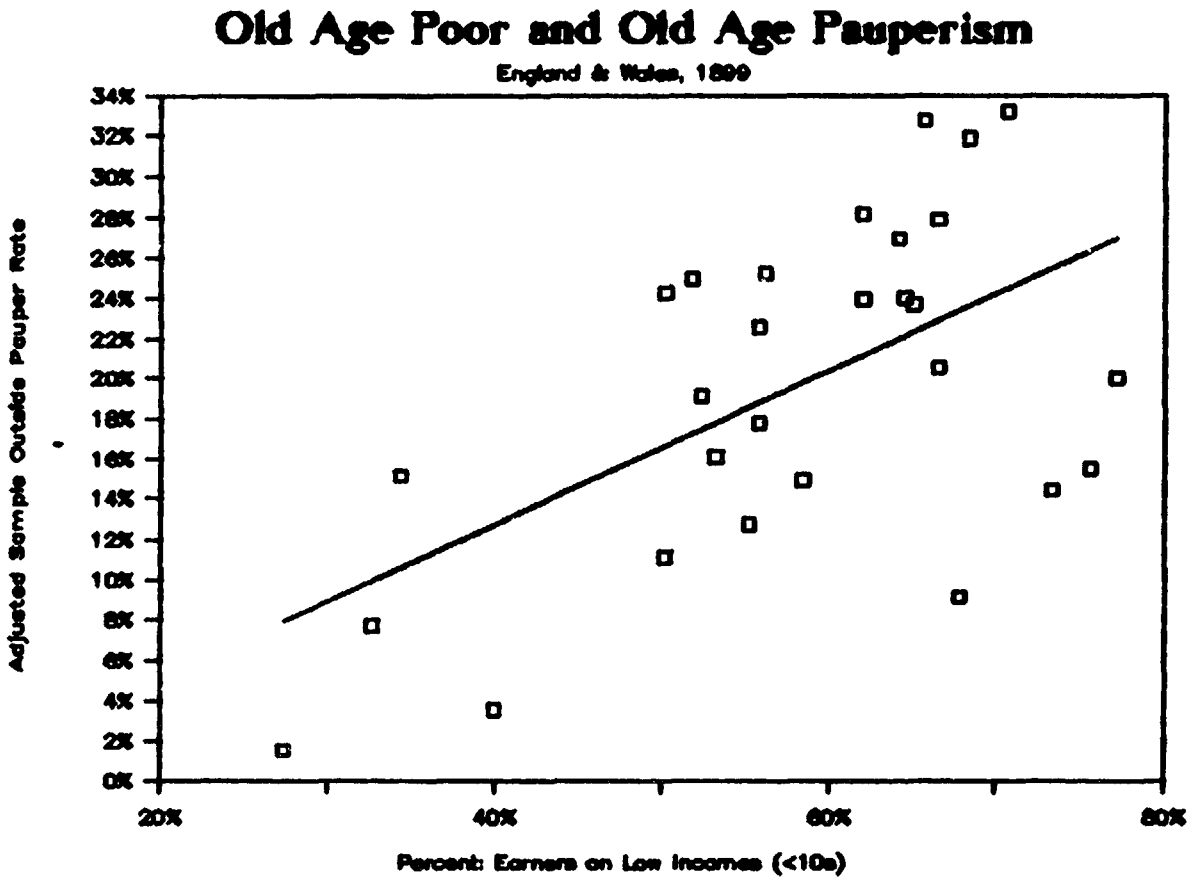


Figure 10. Male Seasonal Distribution of Unemployment Before and After Enclosure, Seven Counties in England

Source: Snell, 1985, p. 148.

Figure 5



Source: See text.

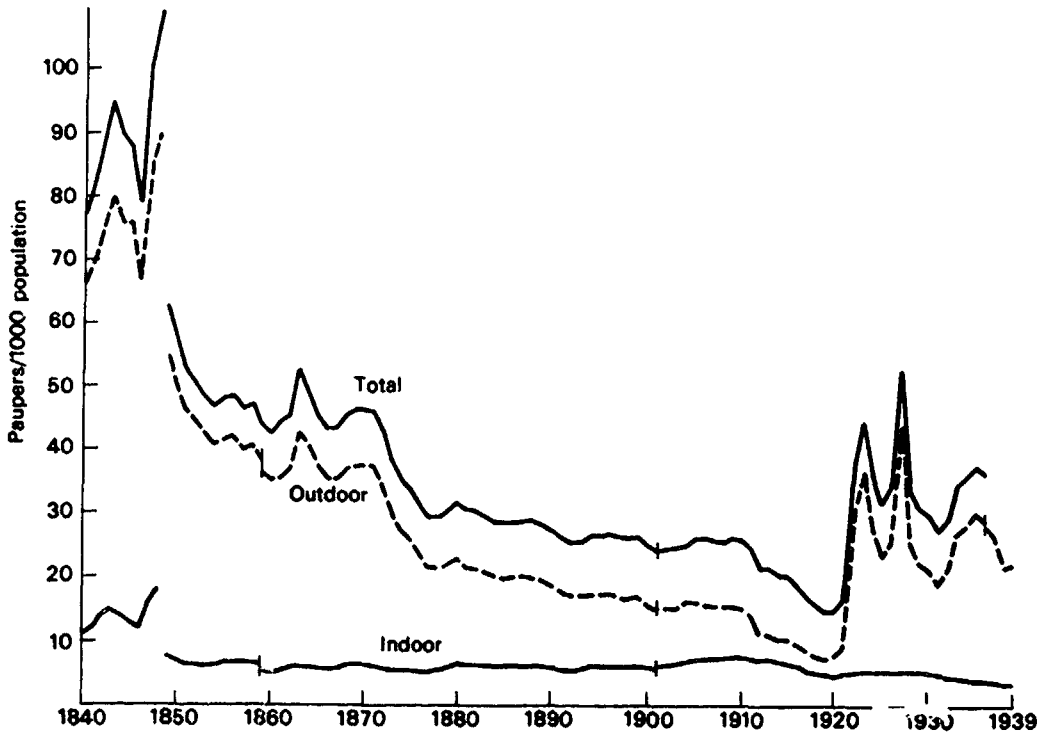
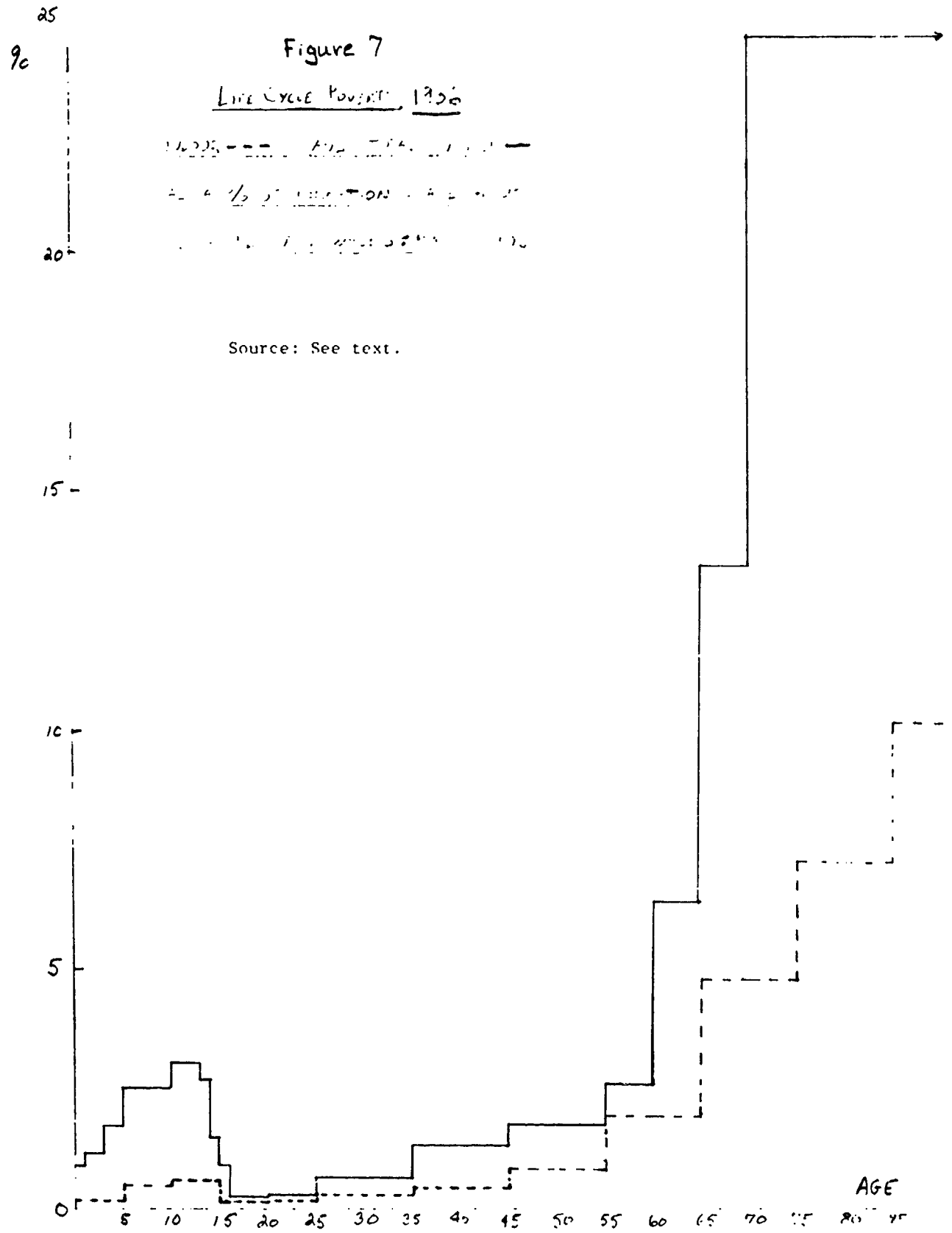


Figure 6. Paupers per 1,000 of Population in England, 1840-1939

Source: See text.

Figure 7

Life Cycle Poverty, 1956



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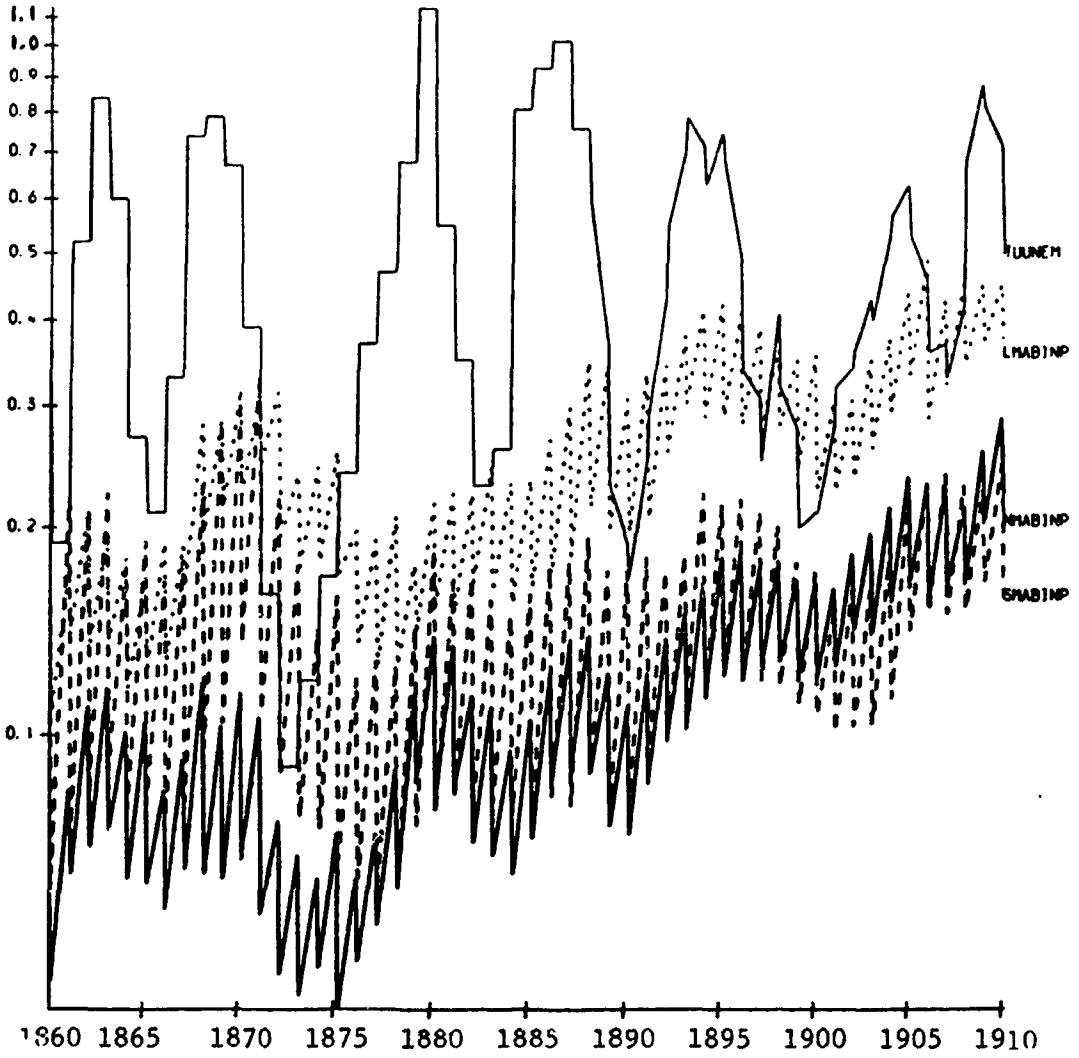

Figure 11. Unemployment and Male Able Bodied Indoor Pauperism

———— North

- - - - - - - - South

..... London

———— Trade Union Unemployment x .1

Source: Mackinnon, 1984, p. 299.

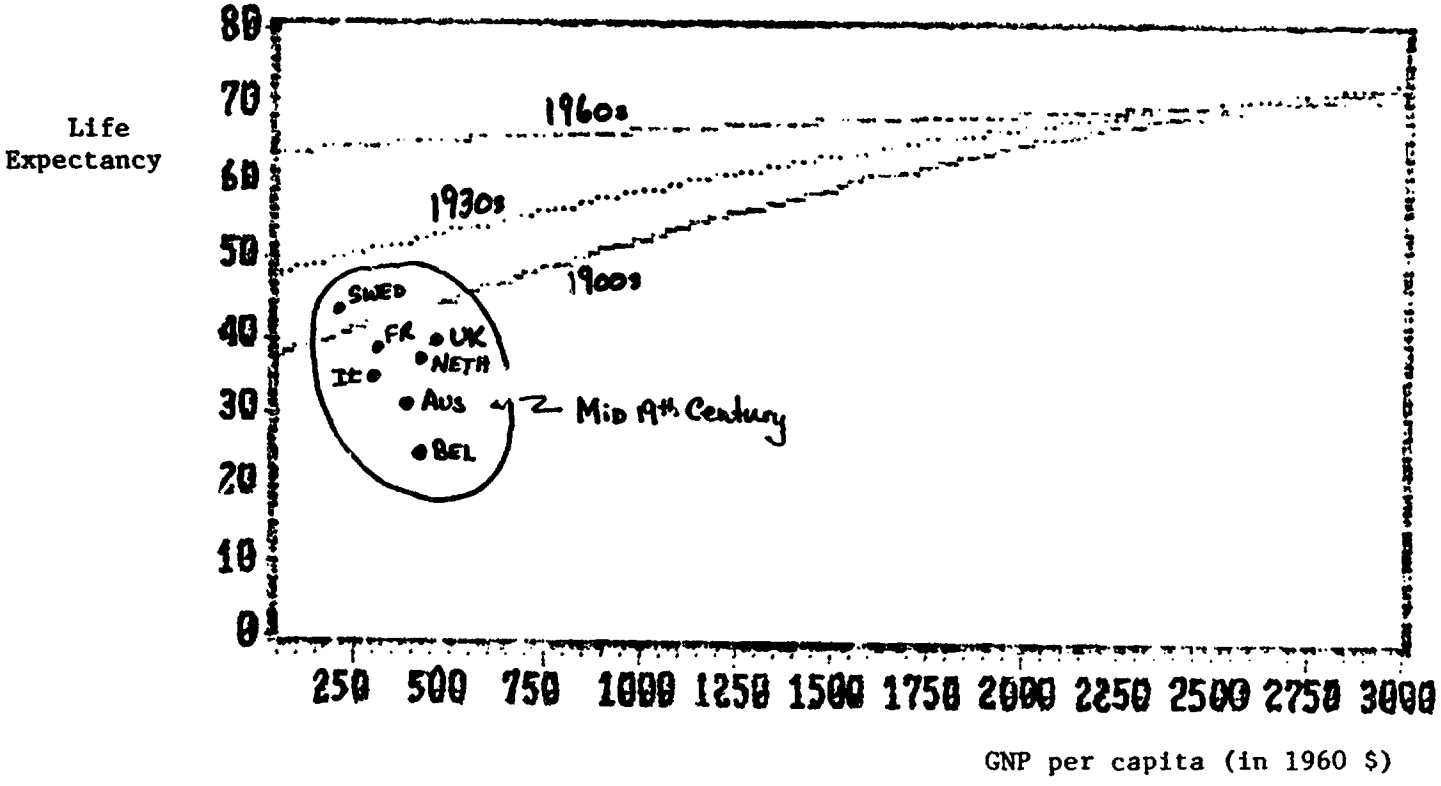

Figure 12. The Life-Expectancy and Living Standards Correlation Through Time

Source: Williamson, forthcoming, Figure 12.

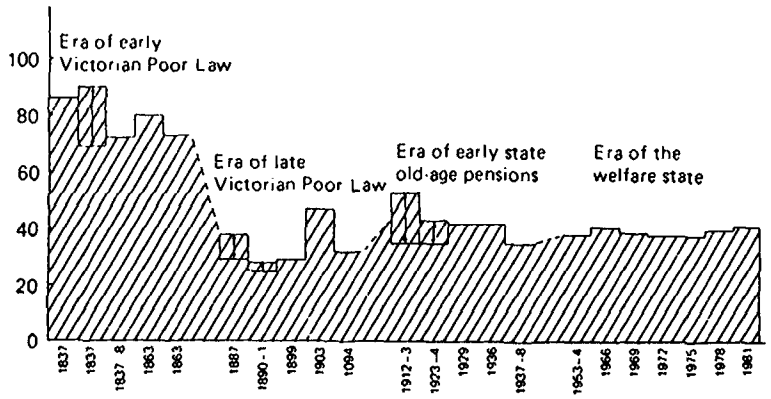

Figure 13. Pensions and Working Class Incomes: England 1837-1981

Source: D. Thomson, 1984, p. 453.

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