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SEGMENTED LABOUR MARKETS WITHOUT POLICY-INDUCED LABOUR MARKET DISTORTIONS

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"SEGMENTED LABOUR MARKETS WITHOUT POLICY-INDUCED LABOUR MARKET DISTORTIONS"

by

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by

Jaime Mezzera

1. Labour market segmentation

Twenty years ago, Harvey Leibenstein wrote: "While a great deal has been written in recent years on the problem of economic dualism,.... rather little has been done to connect it with the nature of technical progress."[1/] I would agree with that even today. This paper therefore attempts to lay out the conditions under which technical progress may lead to labour market segmentation even in the absence of Government intervention - and union pressure - in that market. The analysis is quite similar to Leibenstein's own but differs mostly from it in that I try to explicitly spell out those conditions.

In mainstream neoclassical economics, the existence of labour market dualism has lately come to be accepted, largely as a consequence of Harberger's distinction between a protected sector and an unprotected one.[2/] It can generally be said that most neoclassical labour economists accept Harberger's line and precisely there lies my interest in writing this paper.

1/ H. Leibenstein, "Technical Progress, the Production Function and Dualism", in Banca Nazionale del Lavoro Quarterly Review, December, 1960.

2/ A. Harberger, "On Measuring the Social Opportunity Cost of Labour", in the International Labour Review, June, 1971.

According to that mainstream view, all that happens is that Government intervention, prodded by labour unions - and, sometimes, by its own social considerations related to income distribution - decrees minimum-wage and other laws which distort the equilibrium wage-rental ratio. Unemployment ensues as firms adjust the marginal productivity of labour to the new wage rate. However, policing labour laws is costly, so it only extends to the targets which are most visible both to the Government and the unions, i.e., the large firms which constitute the protected sector. Therefore, most small firms remain undetected while paying less than the minimum wage. On the other hand, the reduction in protected-sector employment as a consequence of the increased wage rate provides the necessary labour supply to the low-wage firms which thus only need to pay the workers' reservation price. Therefore, one observes two distinct wage levels among the employed workers and a much lower unemployment rate than would obtain if policing the wage laws was costless. 1/

The remedy to labour market segmentation which readily emerges from the above framework is the elimination of the wage laws. That "solution," however, is wrong because it assumes a partial

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1/ To keep the exposition uncluttered, I accept the usual assumption of a homogeneous labour force. Integration with standard human capital theory only requires referring to "two distinct wage levels per skill level."

equilibrium setting where only one distortion exists - the wage floor. Removing the wage floor would thus guarantee achieving a Pareto-optimal situation. What I intend to convey in this paper is that there exists a general disequilibrium situation where imbalances in other markets have a bearing on the labour market outcomes; the point is relevant from a policy point of view because once the general disequilibrium approach is accepted, the whole discussion must be framed in second-best terms, accepting that the removal of a single - or even of several but not all - distortions not necessarily leads to an increase in welfare. I will later present cases where welfare is most likely to fall in the face of partial correction of distortions.

Secondly, the simplistic mainstream approach - and this by itself warrants more work in the area - fails to explain rural labour market segmentation. In many, if not most LDC's, minimum wages simply do not exist in the rural areas; yet the segmentation between labour incomes in large commercial farms compared to small minifundia is probably starker than that observed between the urban formal and informal sectors. For instance, in Bolivia, wage-earners working in commercial farms belong to the seventh and eighth deciles of the income distribution while Altiplano peasants are grouped within the lowest four deciles, with the urban informal poor sandwiched in between.[3/]

3/ J. Mezzera and A. Uthoff, "Distribucion del ingreso, migraciones y colonizacion: una alternativa para el campesinado boliviano", PREALC, 1979, Table A-1.

Clearly, something more than Government intervention - which is non-existent in the Bolivian rural market - is needed to explain such a cleavage.

2. The influence of technical progress [1/]

Assume that the total output of widgets in an economy is supplied by two groups of firms. Group 1 is composed of many independent firms which are relatively small; all these are homogeneous in their production functions and each produces A widgets per period. Group 2 is also composed of many independent homogeneous firms, but in this case they are relatively large, each supplying, say, 100A widgets per period. Widgets are produced by capital K and labour L alone. Widgets are either agricultural or non-agricultural consumption goods and firms producing them are located either in rural or urban areas. The market for widgets is small relative to the size of the economy in question.

At the beginning of the process all firms in both groups share identical production functions which are smooth and well-behaved; i.e., twice differentiable. A unit-isoquant for that production function is shown as $X(T_1)$ in Figure 1. Given factor endowments in the economy as a whole and the overall pattern of factor demands, the wage/rental ratio - which is given to the widget sector by virtue of its smallness - is as shown by $(P_L/P_K)_1$ in Figure 1.

Now assume exogenous technical progress. Characterize it, according to current trends, as being of the sort that saves on both factors but propor-

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1/ One persistent theme of the formal/informal literature is the distinction between informal activities which compete with formal firms and those which are complementary to formal firms. See the careful analysis in V.E. Tokman, "An Exploration into the Nature of Informal/Formal Sector Interrelationships," (mimeo), PREALC, 1977. This paper only refers to the former case, mainly because I see no parallel role being played by technical progress in the case of complementarity.

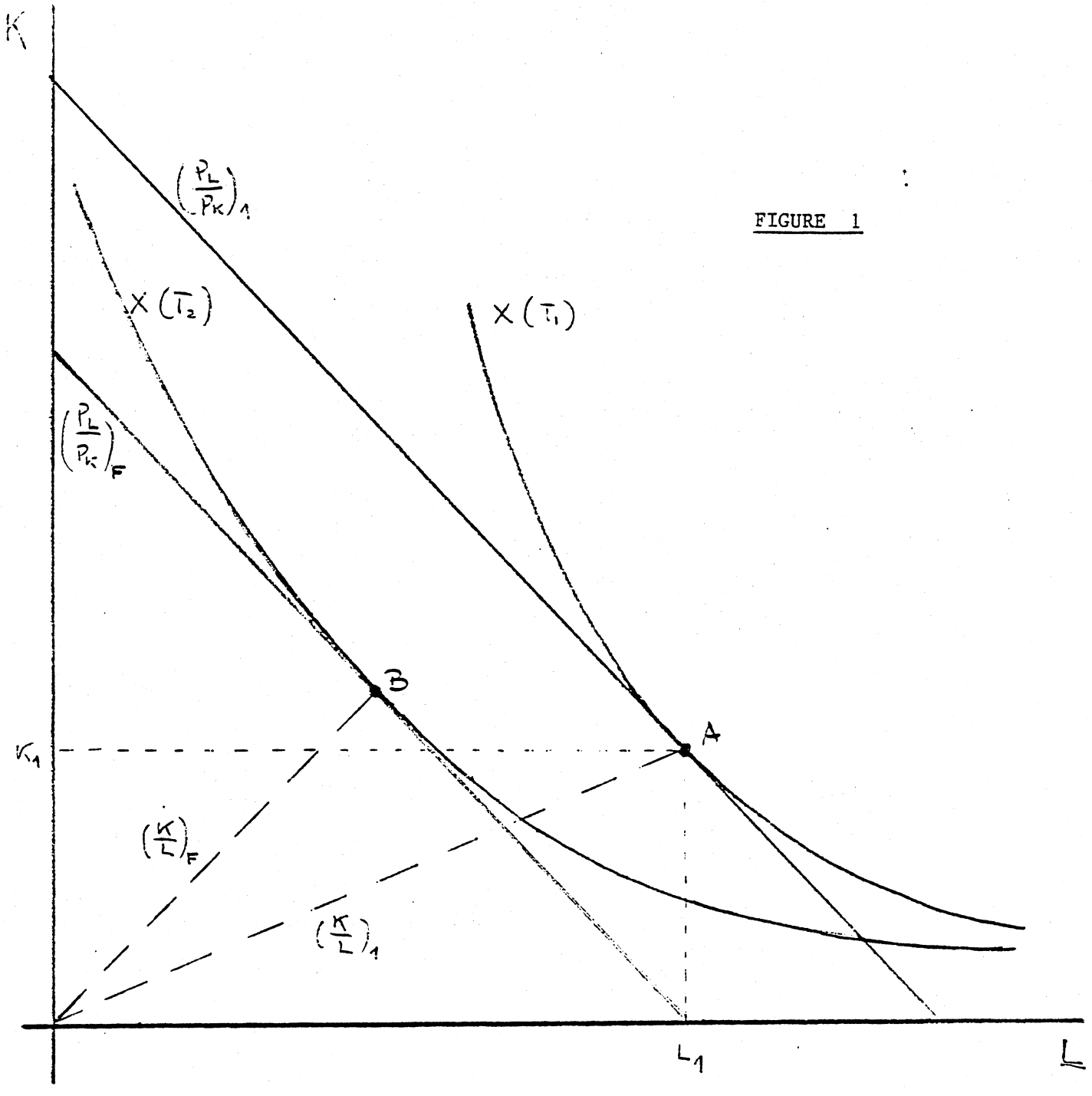
K
$\left(\frac{P_L}{P_K}\right)_1$
$X(\bar{T}_2)$
$X(\bar{T}_1)$
$\left(\frac{P_L}{P_K}\right)_F$
B
A
K_1
$\left(\frac{K}{L}\right)_F$
$\left(\frac{K}{L}\right)_1$
L_1
L

FIGURE 1

tionately more on labour. The new unit isoquant will look like $X(T_2)$ in Figure 1. Given the exogenous wage/rental ratio, all firms that adopt the new technology will produce at point B with a capital/labour ratio or $(K/L)_F$. The fall in the per-unit labour input is very large. So is the reduction in cost and, given competitive assumptions, in price. Even so, the price-elasticity of demand for widgets would have to be extremely high in order to avoid a reduction in employment. One certainly cannot assume very high price-elasticities of demand for all goods affected by a widespread process of technical change. The consequent result is a large reduction in labour demand.

Now let me introduce a few imperfections in markets other than labour. First, let me assume that capital markets are imperfect in the sense that only large firms can obtain large loans. This is not an unreasonable assumption; it may even be that all capital markets qualify. Second, let me define a new technique as one which requires a lumpy investment, the latter being one which far exceeds the amount of capital which was being used, under the old technology, by firms in Group 1.

Therefore, firms in Group 2 will be able to obtain credit to adopt the new technology because they are large; i.e., they own enough assets to use as collateral of their loans. However, small firms will not obtain the necessary credit. Consequently, only large firms adopt the new technology.

With any common set of factor prices, production with the old technique would be inefficient and small firms would have to shut down, no longer able to compete.

Under the usual neoclassical assumptions, the consequent unemployment

would drive down the wage rate, production costs would fall and output under $X(T_2)$ would expand, part of it being exported. At the same time, such output would be produced with lower K/L ratios reflecting the change in the factor price ratio. Both the increase in output and that in labour-intensity of production would proceed up to the point where all the workers displaced by technical change in the widget sector would be reabsorbed, though not only into the sector itself. Harberger's point is that it is the wage floor that snatches defeat out of the jaws of victory by determining potential unemployment which ultimately results in labour market segmentation.

My point is that, under likely circumstances, segmentation will result even in the absence of the institutional wage floor. That result requires some further assumptions. First, let us assume that the new techniques are of the putty-clay variety; i.e., that even if a wide range of K/L ratios are available to the firm before it invests, that range collapses to an extremely narrow one - or even to a single point - once the chosen equipment is put into place. Second, assume that total output of widgets is given by the size of the domestic market and that there exist barriers to trade which preclude export-led output expansion. As a consequence of both assumptions, all those who lost their jobs - i.e., those displaced by technical change from Group-2 firms plus all those who used to work in Group-1 firms which can no longer compete - will not be able to recover those jobs even if they are willing to bid down the wage in the sector. They might then move to different sectors by bidding down wages in the economy in general. However, in LDC's the possibility of importing new technologies off-the-shelf has

guaranteed that technical change of the variety discussed here proceeds in most if not all sectors, including agriculture. Therefore workers who lost their jobs in the widget-sector will find themselves competing with hosts of others, displaced from other sectors.

To this point, however, only unemployment has been explained in a fashion reminiscent of Eckaus .[1/] If modern-sector firms were to lower wages to market-clearing levels without increasing employment, no labour market segmentation would take place. However, it is likely that such firms will not cut wages, at least not all the way down to equilibrium levels. Assume that, after technical change has taken place, wages have become but a minor proportion of total costs. Assume further that physical productivity per worker is positively related to job stability (through, say, firm-specific on-the-job-training) and the latter to the wage level.[2/] Thus, lowering wages to their market-clearing level is a feasible policy for large firms but may well not be their profit-maximizing strategy since by thus lowering wages these firms would achieve minor savings in their wage-bills at the cost of equipment breakdowns, output interruptions, etc. The more automated the plants become, the costlier the risks involved, the higher their probability and the lower the gain from decreased wages.

Therefore, wages in the modern sector may well remain at levels significantly superior to the value of the marginal productivity which was achieved

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1/ R. Eckaus "The Factor-Proportions Problem in Underdeveloped Areas", in the American Economic Review, September 1955, reprinted in Agarwala and Singh, The Economics of Underdevelopment, Oxford U. Pr., 1976.

2/ See P. Doeringer and M. Piore Internal Labor Markets, Lexington, Mass., Heath, 1971; and also M. Wachter: "Primary and Secondary Labor Markets: A Critique of the Dual Approach", Brookings Papers on Economic Activity, 1974, #3 for an excellent survey of why primary/formal firms maximizing long-run profits will maintain wages above their short-run equilibrium level.

with the old technology, even if they remain below the new VMP. At the same time, there is a pool of unemployed workers, and capital equipment which was being used in Group-1 firms is faced with a total write-off due to obsolescence.

Even so, labour market segmentation enters the picture only when the unemployed workers and the prospectively unemployed capitalist/entrepreneurs of Group 1 decide to keep production going at the cost of cutting factor rewards - which, after all, is better than no rewards at all. Group-1 firms thus continue to produce widgets. However, to do so, they must match the prices at which modern firms are selling their widgets. Their factor price line - shown in Figure 2 as $(P_L/P_K)_I$ - therefore has to coincide with $(P_L/P_K)_F$ on the K axis to denote constant unit costs across Groups with costs measured in units of the factor whose price has remained constant. Since that factor price line must be tangent to $X(T_1)$ its consequent shallow slope shows that wages in the backward sector are now lower than they were before technical change was introduced and, a fortiori, lower than those presently being paid in the modern sector.

Let me note that $(P_L/P_K)_I$ in Figure 2 corresponds to the case where all the capital invested in small firms comes from loans.[1/] In that case the return to capital remains constant and the full brunt of cutting costs falls on labour. If their capital fully belonged to the small firms, i.e., if it came from previous savings of the firm's owner, the fall in factor incomes

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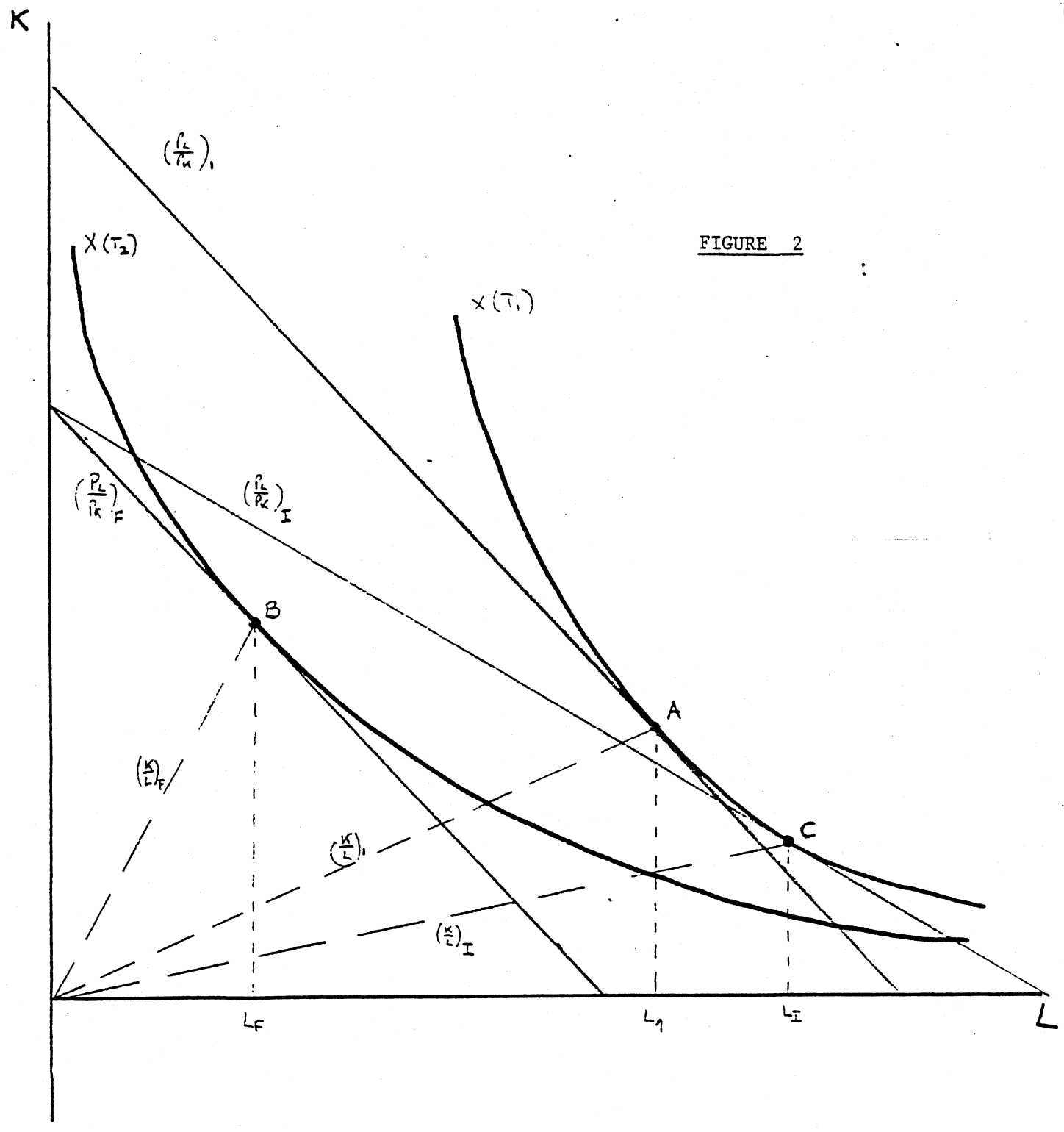
1/ The capital market is imperfect only in the sense that small firms do not get large loans; that does not preclude the small loans needed to finance the old, size-neutral technology.


K
$\left(\frac{P_L}{P_K}\right)_1$
$X(T_2)$
$X(T_1)$
$\left(\frac{P_L}{P_K}\right)_F$
$\left(\frac{P_L}{P_K}\right)_I$
B
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C
$\left(\frac{K}{L}\right)_F$
$\left(\frac{K}{L}\right)_1$
$\left(\frac{K}{L}\right)_I$
L_F
L_1
L_I
L

FIGURE 2

will be shared, allowing for a lesser fall in wages.[1/] Naturally, this point is quite irrelevant when - as is common - firms are family-owned and family manned.

In either case, we find that two groups of firms compete in the production of a single homogeneous good and pay significantly different wages for what essentially is similar work, in spite of the fact that there are no extraneous interventions in the labour market. Nor have we introduced discrimination based on race, sex or other non-economic characteristics of the workers themselves. Naturally, discrimination may exist and even explain who gets which jobs; but the existence and permanence of different wage rates depends on the existence and permanence of widely differing capital/labour ratios across firms that produce the same good for the same market in the presence of only one set of factor endowments.

For that result, six assumptions had to be made, none of them involving distortions in the labour market:

1. Technical progress is a widespread process and saves on both factors but particularly on labour.
2. It is lumpy in the sense defined earlier.
3. Capital markets are imperfect in a very restricted sense, also defined earlier;
4. Output expansion is constrained by the size of the domestic market and by barriers to export expansion;
5. The elasticity of factor substitution of the new technology, once installed, is close to zero;
6. Firms maximize profits by, inter alia, taking account of the effect of wages on labour productivity; i.e., reducing turnover.

1/ See V.E. Tokman, "An Exploration... op. cit., for a discussion of how informal "firms" can, to some extent, vary their non-wage costs.

At least I have the distinct impression that the above set of assumptions should be a fairly realistic description of the situation prevailing in many LDC labour markets; when one includes the rural areas, those assumptions ought to be more frequently found than will minimum wage laws or significant union power.

3. Four comments on related policy issues

Suppose a situation where labour market segmentation exists, where a minimum wage law is being implemented and where a process such as that described in section 2 has taken place, and let us trace the foreseeable effects of eliminating the wage floor, set at the level of VMP in the modern sector. As we saw, wages in the modern sector will presumably fall, but will still remain well above those in the backward sector. Employment in the modern sector will hardly - if at all - increase. As long as the elasticity of factor substitution of modern-sector firms is greater than zero but less than unity, the modern-sector wage bill will fall to the benefit of profits. Income distribution among wage-earners will become more equal as the wage gap narrows but overall income distribution will become more unequal. As long as equality is an argument in the social welfare function, welfare will have fallen. But segmentation will persist. This is merely an application of the theory of the second-best.

A second area of interest is that of credit policy. Because in LDC's it is generally recognized that savings are sub-optimal, most LDC Governments (in a further second-best application) are active in the credit market, mostly with the objective of rationing scarce investable funds towards the

(hopefully) most socially profitable activities. For the same reasons, Government loans usually carry heavily subsidized interest rates. Naturally, such rates do nothing to equilibrate the amounts of credit supplied with those demanded; specifically, introducing a subsidized-credit policy does nothing to total credit available in the economy, facilitating the following exercise in comparative statics. In Figure 3, let $00'$ measure available credit, both before and after the policy is introduced. Let D_L, measured from left to right and D_S measured from right to left represent demand schedules for credit by large and small firms, respectively. Before the official policy is introduced, all credit is used at a rate r_e, with large firms using LC_1 and small firms getting SC_1. Now assume the credit policy stipulates lending will proceed at a subsidized rate r_p and loans will be made for purposes of capital renovation to financially solid firms. As a consequence, large firms soak up the large volume LC_2. The remaining credit volume SC_2 goes to small firms but now at the rate r_s, since small firms do not qualify for the Government policy: they are not financially sound enough to receive "lumpy" loans. It has thus been observed that informal sector firms and peasants are often charged real interest rates in excess of 4% a month.[1/] Therefore, redesigning credit policies might have significant impact on income distribution.

The third comment refers to the facile recommendation of abolishing barriers to trade in order to eliminate labour market segmentation. In yet

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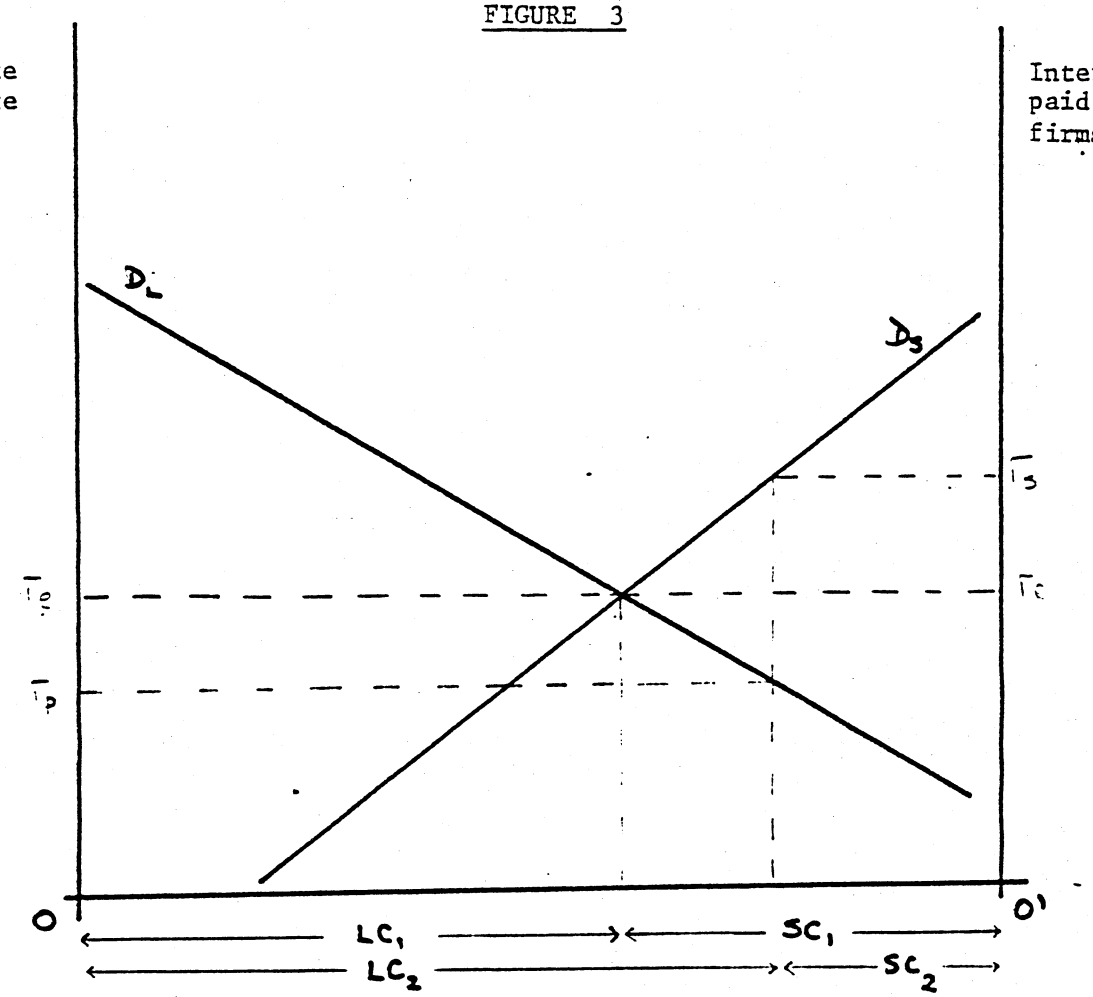
1/ J. Mezzera, "Credito, empleo y distribucion del ingreso en Bolivia" (mimeo) PREALC, 1978.

FIGURE 3


Interest rate paid by large firms
Interest rate paid by small firms
D_L
D_S
$\bar{r}_S$
$\bar{r}_e$
$\bar{r}_c$
$\bar{r}_p$
O
O'
LC_1
SC_1
LC_2
SC_2

another application of the second best this by no means guarantees an increase in welfare for several reasons. Eliminating trade barriers will not erase all the other domestic distortions. Nor will it eliminate the various non-optimalities present in foreign markets: other countries maintain active protection, transport costs are often high, penetration of foreign markets is never costless, monopolies exist in other parts of the world, etc. And even if such distortions did not exist, there is no guarantee that arriving at the Paretian grand-utility-possibility-frontier will provide tangency with the social welfare function; in other words, the result in terms of income distribution is not necessarily the "best" in terms of a given social welfare function even if all resources are optimally allocated.

The final comment is that this interpretation of segmented labour markets ties up very neatly with the "old" interpretations of underemployment about which Rosenstein-Rodan 1/ and others 2/ have been writing since the 40's and 50's. There is no doubt in my mind that the workers in Group 1

1/ Paul N. Rosenstein-Rodan, "Problems of Industrialization of Eastern and South-Eastern Europe," Economic Journal, Jun-Sept 1943, reprinted in Agarwala and Singh (eds.), The Economics of Underdevelopment, Oxford University Press, 1958, and "Disguised Unemployment and Underemployment in Agriculture," (mimeo), Center for International Studies, M.I.T., 1956.

2/ Typically R. Nurkse, Problems of Capital Formation in Underdeveloped Countries, Oxford University Press, 1953, and A. Navarrete and I.M. de Navarrete, "La subocupación en las economías poco desarrolladas," El Trimestre Económico, Oct-Dec 1951, reprinted in Agarwala and Singh, op.cit.; and also the dualist school represented by W.A.Lewis, "Economic Development with Unlimited Supplies of Labour," The Manchester School, May 1954, also reprinted in Agarwala and Singh, op.cit., and "Unlimited Labour: Further Notes," The Manchester School, Jan 1958, as well as by G. Ranis amd J.C. Fei, "A Theory of Economic Development," American Economic Review, Sept. 1961.

firms whose post-innovation incomes are described by the flat slope of $(P_L/P_K)_I$ in Figure 2 are the underemployed with whom the structuralist and dualist schools have been concerned during many years. It is worth noticing, of course, that while underemployment has come to be associated with agriculture in the popular mind, most authors explicitly point out the existence of non-modern, stagnant groups in urban areas as well. For instance, Lewis specifically says: "the phenomenon is not, however, by any means confined to the countryside."[1/] And Fei and Ranis insist: "we wish to underscore the absence of any necessary one-to-one relationship between the subsistence sector and agriculture..."[2/] What is new in the formal-informal approach is that, while the urban traditional groups of the dualist school were truly "marginal" to the economy (see the list of quasi-beggarly activities listed by Lewis in the same paragraph quoted above) the informal units to which I refer here are full-blown firms whose progress is mainly impeded by market imperfections for which they are not responsible. What is more, there are all sorts of economic relations between formal and informal units. The reason to bring this up is one of policy: if traditional urban workers are truly "marginal" then relieving their underemployment calls for job creation in the modern sector since generating more quasi-beggarly activities makes no economic sense. If, on the other hand informal units are (actually or potentially) productive, the optimum policy may well be to foster the development of those very units.

1/ A.W. Lewis, "Economic Development...," op.cit., p. 402 in the Agarwala and Singh book.

2/ G. Ranis and J.C.H. Fei, "A Theory...," op.cit., fn2, in page 534.

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