Inequality and technical change: old and new theories of segmentation

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Abstract

Since the late 1970s, wage inequality has been on the rise in a number of OECD countries, but nowhere it has increased as much as in the UK and the US (Gottschalk and Smeeding 1997; Ruiz Huerta et al. 1999). Wage inequality, on the contrary, increased only little or not at all in many Continental European countries, although recent research seems to suggest an acceleration in the widening of wage differentials and an increase of the "working poor" (Cipollone 2001). The problem of income distribution has become fashionable again, since it is recognised that, by affecting growth, inequality has an efficiency as well as an equity dimension.

The most popular explanation of the increase in wage inequality is based on shifts in relative demand for different skill groups. The relationship between rising wage differentials and shifts in relative demand for skills is based on the assumption that a worker's wage measures his marginal productivity, and that productivity is dependent upon skill. Since the returns to skill have increased, it is argued that the demand for skilled labour has outgrown the increase in supply, while the fall in the demand for unskilled labour has exceeded the decrease in supply.

Changes in demand for skill can arise from different, non-mutually exclusive, sources: skill-biased technological change, shifts in product demand and the process of restructuring, outsourcing and (domestic and international) de-localisation are the most cited. Among these, skill-biased technical change came to dominate. The technological explanation of wage dispersion assumes complementarity between investment in new technologies and skilled labour, so that the diffusion of information technology is taken to account for the acceleration in the rate of growth of demand for skill. Moreover, specific assumptions about technology lead to predict perfect segmentation between skilled and unskilled workers (Caselli 1999, Dunne et al. 2000, Kremer and Maskin 1996) and between productive systems (Duranton 1998).

Explanations of rising wage inequalities based upon the human capital theory have thus converged towards the idea of the segmentation of labour markets which had been developed in the '80s (Doeringer and Piore 1971, Piore and Sabel 1984, Wilkinson 1981, Villa 1984). Some of the features of the old theories have been incorporated into the new models. It is emphasised, for instance, that interaction between technology and workplace organisation shapes the way in which technologies are implemented and determines different outcomes in terms of demand for skills. And

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again, increasing recognition of the role played by changes in labour market institutions in the rise in inequality spurred attempts at making institutional change endogenous, reflecting adaptation to exogenous technological revolution (Duranton 1998, Acemoglu et al. 2001).

The recent rediscovery of explanations of rising inequality based upon models of labour market segmentation calls for clarification of the assumptions that are at the root of the two models. The similarity between them is in fact only apparent. This clarification is all the more necessary in that the two explanations have different economic policy implications.

The 'classical' theories of labour market segmentation are institutionally much richer than their human capital counterpart. The dynamic interdependence between technological and institutional factors – legislation, norms and customs, the structure and organisation of production, bargaining and power relations – shapes the demarcation between internal and external markets and the allocation of workers to the various segments, presides over the process of acquisition and progression of skills and, therefore, governs the determination of wages and wage differentials. Two aspects are considered in detail. The first concerns the concept of skills. The new theories acknowledge that changes in skills depend on how technology is implemented, however, the definition of skill seems to be still too deterministic. The 'classic' segmentation theory emphasises that, far from being simply a technical feature, skill has a social dimension as well; moreover the process of valorisation of skills is part of a learning process based upon competencies which are often tacit, and is affected by the social and organisational system. The second point concerns the relations linking the various segments. In the new models, segregation is entirely determined by technology: skilled workers delink themselves completely from the unskilled, so that, under the assumption of perfect segregation, the two segments have no organic interdependence. The richer institutional framework of the classic segmentation theory, on the contrary, explains how the mutual interdependence between internal and external labour markets can explain changes in boundaries between segments and in the characteristics of each segment.

Finally, observable job characteristics account for only about one third of the overall change in wage inequality, this leaves most of the change unexplained (Katz and Autor 1999). The theories based on workers characteristics (such as skill, education, experience) cannot account for the documented rise of within-groups inequality, i.e, the fact that homogeneous workers are treated differently. It is concluded that explanations of the rise in inequality based only on technological factors and workers characteristics cannot provide a convincing explanation of the rise in inequality.

References

Acemoglu, D., Aghion, P. and Violante, G.L. (2001), "Deunionization, Technical Change and Inequality", *CEPR Discussion Paper Series*, no. 2764.

Caselli, F. (1999), "Technological revolutions", American Economic Review, vol. 89, no.1, March, pp.78-102.

Cipollone, P. (2001), "Is the Italian Labour Market Segmented?", Temi di Discussione della Banca d'Italia, Roma.

Doeringer, P. e Piore, M.J. (1971), *Internal Labor Markets and Manpower Analysis*, D.C. Heath, Lexington, Mass.

Dunne, T., Foster, L., Haltiwanger, J. and Troske, K. (2000), "Wage and Productivity Dispersion in U.S. Manufacturing: The Role of Computer Investment", *NBER Working Paper* no. 7465, January.

Duranton, G. (1998), "The Economics of Productive Systems: Segmentation and Skill-Biased Change", *Centre for Economic Performance, Discussion Paper* no. 398, London, July.

Gottschalk, P. and Smeeding, T.M. (1997), "Cross-national comparisons of earnings and income inequality", *Journal of Economic Literature*, vol.35, June, pp. 633-687.

Katz, L.F. and Autor, D.H. (1999), "Changes in the wage structure and earnings inequality" in Ashenfelter, O. and Card, D. (eds.) *Handbook of Labor Economics*, vol.3, North Holland.

Kremer, M. and Maskin, E. (1996), "Wage inequality and segregation by skill", *NBER Working Paper* no. 5718.

Piore, M. and Sabel, C. (1984), *The Second Industrial Divide*, Basic Books, New York.

Ruiz-Huerta, J., Martinez, R., e Ayala, L. (1999), "Earnings Inequality, Unemployment and Income Distribution in the OECD", *LIS Working Paper* no. 214, June.

Villa, P. (1986), *The Structuring of Labour Markets*, Oxford University Press, Oxford.

Wilkinson, F. (ed.) (1981), *The Dynamics of Labour Market Segmentation*, London, Academic Press.