

## On Three Canonical Responses to Labor Saving Technical Change\*

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It is now generally accepted that we face a technical change juggernaut which is displacing basic labor in favor of skilled labor. The “technology versus trade” debate on explanations of wage trends of the last three decades continues, but it is agreed that a significant portion of rising inequality is accounted for by what is termed skill biased technical progress.<sup>1</sup> Looking ahead, new forms of organization made possible by technology such as Uber, or new technologies themselves such as robotics, are exercising the minds and concerns of economists and policy makers alike. On a business as usual scenario, income inequality will increase with heightened demand for skilled labor, as indeed it has been doing in a range of countries. If rising inequality needs to be counteracted on ethical grounds, or on grounds of preserving social and political stability, what should be the policy stance? This note considers three canonical types of response, two of which have been well discussed but need elaboration and qualification, and a third which has not been broached in any significant manner.

The first type of policy stance is to counteract the demand side of labor saving and skill demanding technical change by increasing the supply of skilled labor. This is a canonical response—in “the race between technology and education”, when technology runs faster education needs to speed up too.<sup>2</sup> Indeed, the last three decades are characterized as the race having been lost by education. However, simple state provision of formal education is recognized to be only part of the answer to skill development in a market economy. An early assessment of, and cautionary note on, formal education and its impact on productivity was provided by the late Kenneth Arrow:

“The conventional view among economists is that education adds to an individual’s productivity and therefore increases the market value of his labor.....I would like to present a very different view. Higher education, in this model, contributes in no way to superior economic performance; it increases neither cognition nor socialization. Instead, higher education serves as a screening device, in that it sorts out individuals of differing abilities, thereby conveying information to the purchasers of labor.” (Arrow, 1973, pp 193-194).

This view of “Higher Education as a Filter” also throws into sharp relief the role of unequal provision of family level inputs to college attendance and skill development.<sup>3</sup> On this view, the rising inequality as a result of rising demand for skilled labor can only partly be counteracted by formal education, whose outcomes will only reflect the underlying rising inequality on incomes.<sup>4</sup> Furthermore, that part of skill

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<sup>1</sup> See for example Autor (2014)

<sup>2</sup> Goldin and Katz (2009)

<sup>3</sup> The literature is large. Recent illustrative publications are Lovenheim (2011), Cunha, Heckman and Schennach (2010).

<sup>4</sup> In developing countries there is a vigorous debate on the effect of formal education on economic growth. An early skeptical note was sounded by Pritchett (2001).

development which is itself work related cannot be addressed by formal education. Here, displacement of basic labor will again set up a vicious downward spiral of degradation of work related skills.

The second type of canonical response is that of “tax and transfer” mechanisms to mitigate market inequality. Indeed, they have kept inequality in check in Western Europe compared to the US. These mechanisms are important because in any case a supply side strategy based on education is one targeted to the next generation—it will only pay off in 15 to twenty years’ time. But the problem of labor displacement is an immediate one. A forty year old displaced steelworker in the US mid-West cannot be turned into a computer programmer. And yet he will be with us for the next forty years. Indeed, one might say that a central problem of the next three decades will be how to reach into the pockets of the computer programmers, raise resources, and transfer them into the pockets of the unemployed steel worker. This large category of “marooned” workers whose employability has been made obsolete by technical change will be a feature of our landscape in the decades to come. How are they to be supported?

Economists’ answers to these questions are fairly well developed. The starting position is that the most efficient form of transfer is direct cash, approaching our ideal of a “lump sum transfer.” Any degree of indirectness in the transfer, for example through subsidizing consumption, or even subsidizing work in the steel factory, is more inefficient than a direct transfer. Economists also have frameworks for discussing targeting of transfers to the least well off, and public works schemes for effecting the transfer. Consider for example a public works scheme where anyone who turns up will be given work at a set wage. This is a self-targeting form of transfer because only those with alternative wages even lower will turn up to the public works scheme. It is also self-liquidating in the sense that as market prospects improve and alternative wages rise, public works employment will “melt away.” Theoretical frameworks and empirical assessment are available to help guide policy makers design the most economically efficient forms of transfer to displaced and now marooned workers.<sup>5</sup>

However, the economics of a transfer mechanism is one thing. Its social acceptability is quite another. Some forms of transfer, while cost effective and efficient, may simply be not dignified in particular social and cultural settings. Here are three examples which illustrate the dilemma. First, while a simple cash transfer making up for the redundant steelworker’s lost wages is economically efficient, and of course would be welcomed by the recipient compared to the alternative of no transfer, it does not substitute fully for a life style and culture built around the norms of the dignity of a wage earned through the sweat of the brow. How to substitute that in social acceptable ways is the issue, and one which economics by itself is not well suited to addressing. Second, means testing of transfers is well analyzed in economics, and we are well aware of the range of economic benefits and costs associated with fine targeting of transfers to endure they get to the poor and only the poor. But such means testing is quite acceptable in some societies, while it is considered undignified in others because of particular histories and norms.<sup>6</sup> Third, while public works schemes provide an excellent self-targeting incentive mechanism for transfers, what is done in the public works scheme matters too, in terms of whether it is considered dignified and socially acceptable. Digging up holes to fill them up again may satisfy Keynesian and targeting objectives, but work that is considered socially useful in the local context is what is called

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<sup>5</sup> For a recent overviews see Kanbur (2010, 2017b).

<sup>6</sup> There is of course a huge literature on these issues, including how different forms of transfer can affect tensions within communities. See Kanbur (2017b) and Stuber and Schlesinger (2006) for illustrations.

for by the participants.<sup>7</sup> The intersection of the economic efficiency and social acceptability of transfer mechanisms will be at the heart of the analytical and policy agenda in the next three decades.

There is, or rather should be, a third canonical response to the technical change juggernaut. Why, in fact, should we take the trajectory of technical change as given? Why can it not be altered to suit social priorities? But we find this largely absent from the present analytical and policy discourse. The issue was raised by the late Tony Atkinson in his last book, *What Can Be Done About Inequality?* The very first proposal in this book is:

“The direction of technological change should be an explicit concern of policy-makers, encouraging innovation in a form that increases the employability of workers, emphasizing the human dimension of service provision.” (Atkinson, 2015, p. 303)

Of course the idea that technological change is not just manna from heaven but itself determined by market forces is an idea that goes back at least as far as Arrow (1962).<sup>8</sup> But the focus of almost all of the literature has been on efficiency, in particular that the market forces if left to themselves would deliver inefficiently low levels of investment in research and development (R&D). The vast literature on network and public good effects, on uncertainty and R&D, on patents, on public investment in research, the origins of the internet, and so on, is virtually all on efficiency and inefficiency rather than the distributional characteristics of different trajectories of technical change. If we were to take Atkinson’s proposal seriously, it sets out an analytical agenda on why market forces are generating labor saving technical change and whether there is cumulative causation in the bias of technical change against basic labor. On the basis of such analysis, we can then ask what policy interventions could best shift the arc of technical change in a direction which would lead to more socially equitable outcomes.<sup>9</sup>

Each of the three canonical responses to the current trajectory of labor saving technical change raises further questions. A simple supply side expansion of formal education can only be part of the answer. Transfers to hold market inequality in check need to address both economic efficiency and social acceptability. But the third possible response, of policy interventions to make innovation more labor using, is the least well developed and yet perhaps the most powerful response of all.

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<sup>7</sup> An example of how the framing of public works schemes in terms of community benefit is important in their social acceptability is given by Philip (2012) for South Africa.

<sup>8</sup> The idea was further developed and given its modern formulation by Romer (1990).

<sup>9</sup> Kanbur (2017a).

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