Technological change and employment – the debate since the Luddites

Product innovation increases demand and therefore employment

First-order effect of process innovation is negative, but this may be offset by higher-order effects (lower prices increase demand & new demand for capital goods)

Technological change has (endogenous) biases: it saves more labour of one kind ("low-skill") than of other kinds

Employment, technology and the income distribution

If we increase the ratio of capital to labour, the ratio of labour income to capital income tends to fall because by-and-large capital and labour substitute easily

In manufacturing, this effect tends to be weakest for medium-skilled labour (manufacturing is medium-skill intensive)

Therefore, manufacturing has traditionally been the (relative) safe harbour for the mass population of workers (proper education safeguards proper income)

The historical safe harbour

Technological change mainly replaces low-skilled labour

Replaced workers will acquire medium-level skills and become employed in manufacturing (and some modern services sectors),

where they earn a decent living that enables them to exercise demand that offsets the negative effects of process innovation

This is a delicate equilibrium…

The grim outlook speculation

Automation, robotization and AI imply that especially the degree of substitutability of capital and medium-skilled labour will go up drastically

This will make income from medium-skilled labour much more responsive to investments in capital goods (machines)

Hence the safe harbour will disappear, leading to unemployment, increased polarization of income distribution, the “social fabric” will have to react to this