LABOUR IN THE CIRCULAR ECONOMY: A CATALYST TOWARDS SUSTAINABLE DEVELOPMENT

Metta J 1)

1) Research Group Sustainable Development, Faculty of Economics, KULeuven, Belgium

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In the current technological (e.g. artificial intelligence, internet-of-things) and climatic contexts (e.g. migrations, pandemics), it is important to address issues regarding the future of labour (namely the productivity and the role of labour). Although practitioners mention the circular economy benefits on labour productivity due to the reduction of pollution induced by inadequate waste management (EMAF, 2015; European Union, 2019; Wijkman & Skånberg, 2015), few studies evaluate the circular economy impacts on labour productivity. Most research ascertains the positive effects of the circular economy on the reduction of environmental negative externalities (e.g. resource depletion and pollution) leaving out labour consideration.

This paper tends to substantiate the literature on circular economy and its impact on labour productivity. It investigates the optimal labour allocation to the circular sector to sustain development while limit the environmental impacts of waste. The circular economy is analysed as an alternative to cope with both the resource exhaustion and the pollution induced by improper waste management, whilst presenting insights on the future of labour.

The model assesses the potential role of circular economy to reduce waste-linked externalities on labour. I shape a two-sector growth model in a simple closed economy in developed countries. I investigate the optimal labour allocation between the production and the circular sectors to sustain development while limiting impacts caused by waste on labour. The waste stock is assumed to be inappropriately managed, and to negatively affect labour productivity. (e.g. Italy, a landfill burned forcing Roman workers to stay home (Rome in Ruins, 2019). I model changes in the economy due to an endogenous choice of labour in the supply of the two sectors. I also analyse under which conditions the circular economy can generate endogenous growth.

The results set the conditions to reach a circular economy model while engaging labour to an additional sector of the economy. When the economy values the negative effects of waste pollution on labour, an equilibrium is reached where maximum labour productivity is achieved. However, if the economy fails to value the waste negative externalities, labour productivity early and rapidly declines. Different thresholds are provided in terms of optimal labour supply and optimal materials shares (both recycled and exhaustible) to

be employed in both sectors of the economy. The results support the design of financial instruments to internalise the damages linked with waste management and to promote the circular economy sector.