

The impact of subjective well-being on economic productivity: a sub-national empirical analysis in the UK

Abstract

We examine the relationship between subjective wellbeing (SWB) and productivity across the UK. The novel contributions are to investigate SWB-productivity relationships at geographic scales not previously analysed in the UK, and to extend the analysis beyond life satisfaction to include happiness, anxiety, and feelings that one's activities are worthwhile. Using ONS labour productivity data at the local authority, NUTS II, and NUTS III scales, our results shed light on the spatial dimensions of SWB-productivity relationship. Baseline models estimate the effect of SWB on productivity in the cross-section and panel (370 local authorities, 174 NUTS II regions, and 40 NUTS III regions, from 2011-2018). Further analysis uses non-parametric frontier techniques (Data Envelopment Analysis) to address issues of reverse causality. Results help to fill an evidence gap in the SWB-productivity relationship that lies between existing micro (firm-level) and macro (national-level) studies. Investigating these relationships at various policy-relevant scales provides insights for levelling-up, addressing the productivity puzzle, and addressing regional inequalities.

Authors

Matthew Agarwala¹, Diane Coyle¹, Valentina Di Gennaro² Silvia Ferrini²

Motivation

Firm-level studies indicate that employee wellbeing is an important correlate of firm performance, measured in terms of customer loyalty, profitability, staff turnover, and employee productivity (Oswald et al 2015; Krekel et al 2019; Bellet et al 2020). But what about wellbeing beyond the firm? Does it affect productivity at different geographic scales of aggregation and at which different policy levers may operate? The answers to these questions have important implications regarding the role of the public versus private sectors in supporting both wellbeing and productivity. They also speak directly to policy interests in tackling regional and spatial disparities in quality of life and understanding the links between 'wellbeing economics' and more conventional metrics such as productivity.

Several studies suggest pathways through which wellbeing affects productivity at the individual, firm and country level. For instance, firm-level experimental studies generally find that participants who receive happiness-enhancing treatments perform better in creative tasks relative to control groups, suggesting mood may play an important role (Amabile et al., 2005; Isen et al., 1987; Oswald et al., 2015). At the national scale, studies show that well-being trends differ significantly across countries over short and long periods of time (Easterlin and Angelescu, 2009; Sacks et al., 2012), but that life satisfaction and productivity are positively related even in the aggregate (Di Maria et al. 2019; Corboni and Russu 2015).

However, the local and regional scales have not been widely investigated. Thus, a crucial piece of the evidence base for place-based productivity policies and delivering the levelling up agenda is missing. To address this, we explore the impact of SWB on labour productivity at three meso-scales (local authorities, $n = 370$; NUTS II regions, $n = 174$; and NUTS III regions, $n = 40$) and across time to understand local and regional differences in productivity.

The present study is novel in several ways. First, the empirical literature has never tested the relationship between subject well-being and productivity at local level in the UK and we aim to fill that gap. Second, we extend the wellbeing-productivity debate beyond the 'factory doors'. This is motivated by discussions with business leaders who confirm the importance of community context in determining workplace wellbeing. The argument is that because most employees spend most of their time outside of work, what happens at home and in the community is likely a major contributor to wellbeing at work. Third, we combine newly developed regional GVA statistics with SWB data for the first time.

Despite broad policy interest, the pathways between SWB and productivity within the local areas and communities where people live and commute are still unexplored. The expected outcome of our work is a better understanding of driving factors and bottlenecks in sustainable prosperity for the UK's regions. We will provide evidence testing the

¹ Bennett Institute for Public Policy, University of Cambridge

² Centre for Social and Economic Research on the Global Environment (CSERGE), University of East Anglia

hypothesis of a positive association between subjective wellbeing and productivity gains, and thus whether SWB is not only desirable per se, but it is conducive to higher productivity and improves local areas' economic performance.

Data

Total factor productivity data is not available at our spatial scales of interest due to a lack of spatially explicit capital input data. Instead, we use ONS labour productivity data for local authorities, NUTS III, and NUTS II regions. Subjective wellbeing data entails the 'ONS 4' – life satisfaction, happiness, anxiety and feeling that one's activities are worthwhile – and are taken from the ONS Annual Population Survey. The ONS SWB data provides a large sample ($N \approx 320,000$), long time series (2011 – 2019), and easy aggregation to various spatial scales via the ONS Open Geography Portal. An extensive literature, across different disciplines, supports the consistency of these subjective well-being measures (Blanchflower and Oswald 2004; van Reekum et al. 2007).

Method

The analysis will include both econometric (panel and cross-section) estimations and Data Envelopment Analysis (DEA). Regression controls will be identified via literature review and from meta-analyses. However, for analysis at the NUTS II scale, for which there are only 40 spatial units for observation, regression techniques are less reliable. Moreover, the possibility of reverse causality cannot be ruled out. As such, we will employ DEA, following DiMaria et al (2019). DEA is a linear programming technique for assessing productive efficiency. By relating inputs to outputs, we compute the efficiency frontier and analyse how far each unit (e.g. local authority or NUTS II region) lies from that frontier. In our case, inputs include labour, SWB, and various proxies for capital inputs. Output is measured in terms of regional GVA. Moreover, because we use each of the ONS 4 as SWB inputs, we can use DEA variable selection tests to assess the relative contribution of each dimension of SWB to productive efficiency. Finally, DEA enables us to 'flip' the analysis, modelling SWB as either an *input to* or *output from* the production process. As such, we are able to make initial comments on the possibility of reverse causality in the relationship between SWB and productivity.

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