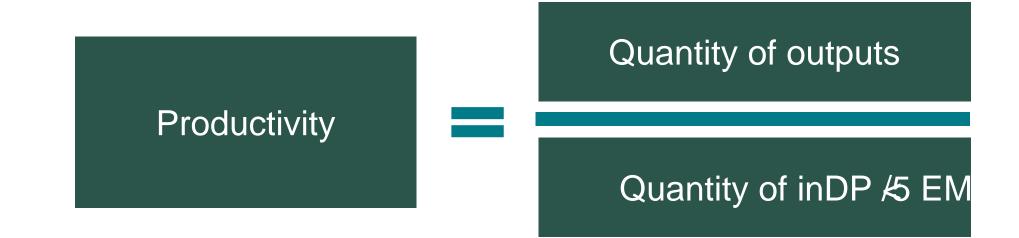


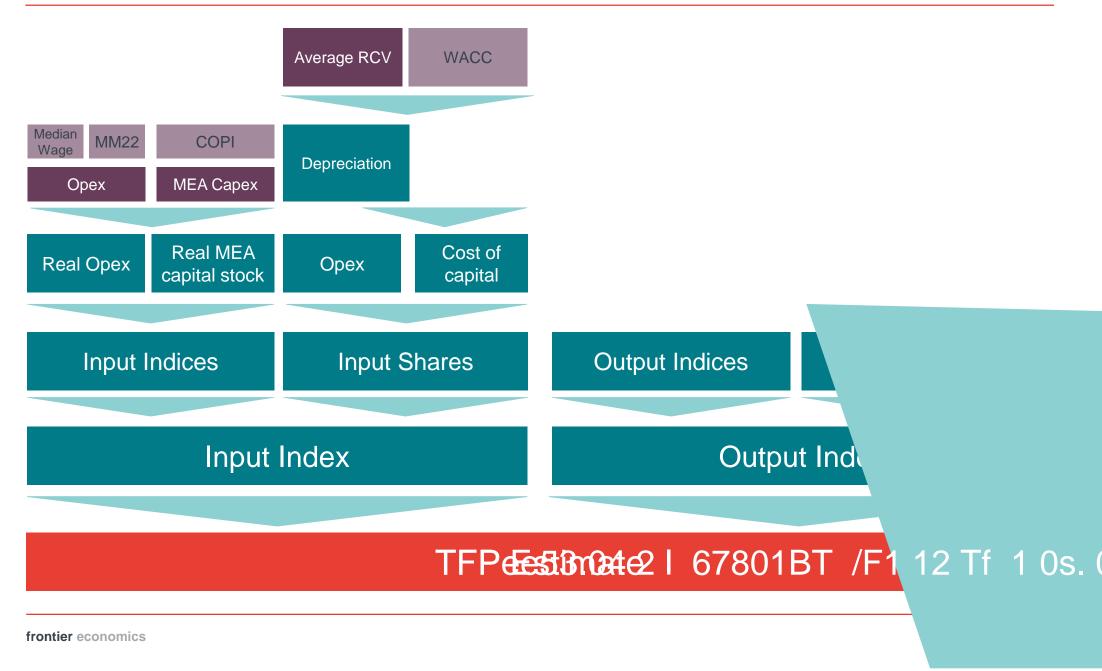


Total factor productivity is the most common measure of growth in productivity and efficiency

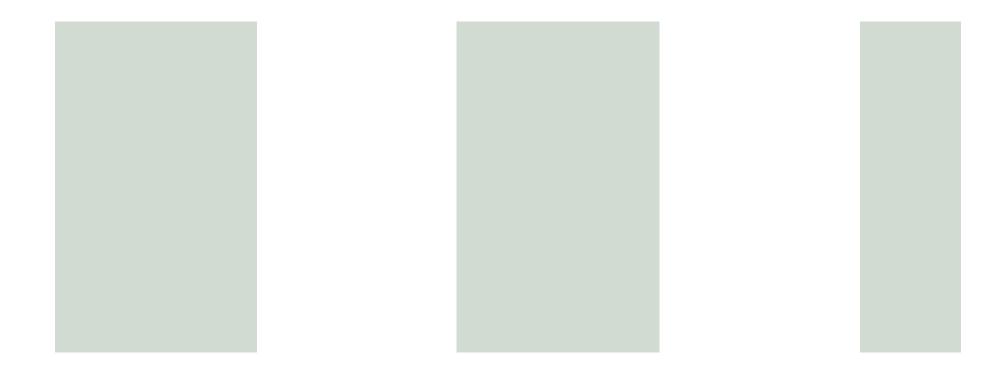


#### Assumptions

Constant returns to scale That inputs are paid the value We applied a simplified version of Saal & Parker (2001) separating outputs into water and sewerage, and costs into opex and capex

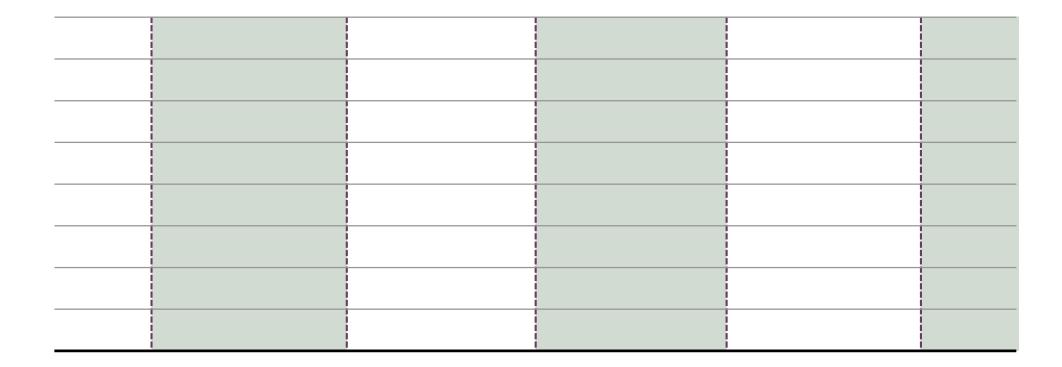


## Average annual quality-



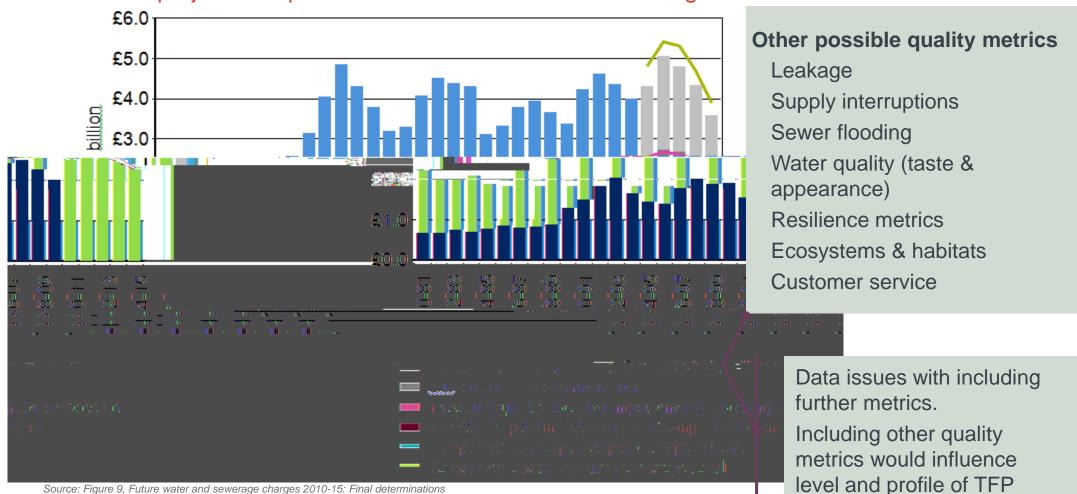
## This corresponds to cumulative quality-adjusted growth of 64% since 1993 (27% with no quality adjustment)

Cumulative TFP growth, 1993-2017



Source: Figure 3, Productivity improvement in the water and sewerage industry in England since privatisation

# Expenditure on enhancement has not slowed by the extent that our quality measure indicates



#### Actual and projected capital investment 1981-2015 – Ofwat figures

frontier economics

growth.

### Productivity performance in comparator sectors

Choice of comparator UK sectors Sectors chosen based on similarities of activities, inputs and regulatory environment.

Utilities, transport, chemicals, construction, motor vehicles, post &

