Estimation of urban infrastructure deficit in developing countries as a function of historical cement consumption

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Abstract

This paper proposes the application of Bayesian pooling to forecast the cement long term market potential in developing countries. The objective is to use references from the historical cement consumption in advanced economies to quantify the current deficit on urban infrastructure in developing countries and to simulate potential cement demand evolution. The main assumption of this work is that while the level of urban infrastructure and cumulative cement consumption per capita are closely related, the cement demand cycle in advanced economies has similar historical pattern regimes. Specifically, the cumulative cement consumption per capita achieved at the peak of consumption is comparable within these countries and indicates the achievement of minimum levels of urban infrastructure adequacy. This similarity can be used to foresee future cement demand in countries with low current stock levels of urban infrastructure. The empirical work is based on data collected for 129 countries containing historical observations of cement consumption and other measures to characterize the local urban infrastructure development (e.g. urbanization rate). These observations are later used to estimate shrinkage factors aimed to control specific country characteristics. The results are promising as strongly indicate the existence of historical cement consumption patterns and reference values within advanced economies.