
Editorial: Depreciation: old concept and new causes

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Introduction

The topics examined by property researchers change over time as new issues and events affect real estate markets, property values and performance patterns, and occupier and investor decisions. As a result, some topics fall out of fashion and can then go for years without being revisited. Depreciation is arguably an unfashionable topic. Yet, the concept of depreciation remains extremely relevant as the impact of climate risk, decarbonisation or health considerations on the future places and spaces where we will live and work feeds into investment performance and asset values.

So what is depreciation and obsolescence?

Depreciation describes the process of buildings or other fixed assets losing value through time in the absence of active management. It is an economic phenomenon that accountants try to proxy through write downs to asset values in financial statements. Investment properties are somewhat different as the values are marked-to-market in most accounting regimes, but they are still subject to depreciation as an economic process. This process is sometimes hidden in a period of rising values, but it is still present when the values of older properties fail to rise at the same rate as the rest of the market. The causes and effects of depreciation are of concern to commercial real estate investors, asset managers and lenders.

In academic circles, research into depreciation is perhaps best associated with the early contributions of [Bowie \(1984\)](#), [Salway \(1986\)](#) and [Baum \(1991\)](#). This research identified the two principal causes of depreciation to be physical deterioration and obsolescence. Obsolescence is about how buildings or other assets can stop being fit for purpose even if they are physically sound. The factors that may lead to obsolescence include shifts in technology, changes in working practices and the impact of new regulations. A contemporary example is the introduction of Minimum Energy Efficiency Standards in the UK, and the likely tightening of such standards in future creates the risk of obsolescence for assets that cannot be adapted easily to any new requirements.

It is obsolescence that makes predicting how an asset will depreciate (and when to try and combat it with expenditure) particularly difficult. Much past effort has been expended on trying to model the shape of depreciation in the absence of expenditure, with an expectation that values will follow an S-curve in how they change as buildings age (for example, [CEM, 1999](#)). However, this does not allow for step changes in tenant preferences or investor and lender requirements that may be driven, *inter alia*, by potential or actual regulation. Another challenge lies in quantifying the appropriate expenditure to future proof buildings against such changes.

Depreciation in a changing world

Moreover, as the factors driving obsolescence have changed through time, historical measurements of depreciation rates may be of limited value in forecasting its impact on rents or capital values going forward. The IPF published studies for the UK in 2005 and in 2011 that



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measured rental depreciation and capital expenditure rates (IPF, 2005; IPF, 2011). The results of these studies suggested that office buildings experienced most depreciation while also receiving more capital expenditure than assets in other sectors. Retail (standard shops) experienced the least depreciation, with industrial properties somewhere in the middle.

Those results reflected significant changes to office working practices and technologies in the 1980s and 1990s that made older generations of office buildings less suitable for occupiers. The need to improve the energy efficiency or healthiness of buildings, whether driven by regulation or by occupier and investor demand, might lead to different rates of depreciation and different levels of expenditure for the main CRE sectors. The expansion of the CRE investment market into other forms of real estate highlights another gap in our knowledge: how depreciation might affect leisure, healthcare, hotel or residential assets in investor portfolios.

Conclusion

How can we address these gaps in knowledge? Longitudinal studies have allowed the performance of assets to be set in the context of events and expenditures that have affected them. However, they are typically difficult and expensive to set up. Cross-section studies using hedonic techniques are arguably easier to conduct and update, but these are prone to issues such as survivor bias as the worst examples of depreciation will be in buildings that have not lasted through time or which have been substantially altered by the time that analysis is conducted (see Dixon *et al.*, 1999; Crosby *et al.*, 2012). Yet a hedonic approach might lead to more timely insights that help investors and analysts understand the influence of more recent trends on real estate rents and values.

Do these measurements matter to practice? Property investors may simply draw on their knowledge of the risks involved and upcoming regulations in sectors where they are active to inform their choices on which assets to acquire, refurbish or sell. However, these decisions must usually be accompanied by underwriting in the form of cash flow models and forecasts of outcomes in different situations. It is here where allowance for depreciation in future rents and values, and for any expenditure to reduce its effects, must usually be made to gauge the potential investment returns in different situations.

Therefore, finding an approach that produces robust but timely measurements is important to address these knowledge gaps given the datedness of many depreciation rates reported in the literature and the lack of such measurements for real estate markets outside of the UK and USA. In turn, such research should improve quantification of the risks involved to future asset values in the context of portfolio performance or loan security. Much effort is being expended on understanding the impact of modern trends on place-based rent or yield forecasts. Yet equal effort is needed to understand the potential implications of these trends for the values of individual buildings, starting with those impacts that are already beginning to emerge as such trends unfold.

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