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THE USE OF SATELLITE DATA IN FINANCIAL MARKETS

Abstract

Satellites have long been used to measure economic indicators that could not be analyzed due to poor data quality or the lack of regular measurements. For example, researchers in several seminal works investigate economic development, air pollution, and housing quality using satellite data from the visible and invisible light spectra. In recent years, however, not only have economists become interested in using satellite images, but actors in the financial sector are also increasingly using satellite data to improve risk-adjusted returns. From quickly recognizable applications in the commodity markets to measuring trade movements and forecasting quarterly earnings by counting vehicles in parking lots in front of retailers, satellite imagery is now an often-used source for information in finance.

This rise in popularity was made possible by the search for "alternative data" in the financial sector. Moreover, companies such as Planet, IceEye, and BlackSky have expanded the range of possible applications with their constellations, which offer high resolutions and short revisit times. Integrating methods such as Artificial Intelligence in the analysis of satellite images has also enormously increased the pace and informative value of analyses.

To the best of my knowledge, this paper gives the first overview of the use of satellite imagery by practitioners and in financial literature. The main source for these applications were academic literature and announcements of partnerships between earth observation companies and actors in the financial sector. However, I also examined quarterly reports and transcripts of earnings calls of well-known earth observation companies to detect other applications of satellite imagery in finance. I then analyzed the applications regarding the field of use, methods, and underlying satellite constellation. The paper thus offers practitioners' and researchers' best practices and gives an overview of the available and utilized data sources/satellite constellations. Startups that analyze satellite imagery or even build new constellations could also benefit from this insight into the business models that interest the solvent players of the financial sector.