Deep learning models: Auto-Encoders and Generative Adversarial Networks for learning multivariate joint probability distributions

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Abstract

This paper analyzes a unique micro-dataset capturing the ownership of about 800,000 properties in Dubai. We use this dataset to document patterns in cross-border real estate investments, a blind spot in the analysis of financial globalization. We obtain four main findings. First, offshore real estate in Dubai is large: at least $146 billion in foreign wealth is invested in the Dubai property market. This is twice as much as real estate held in London by foreigners through shell companies.

Second, geographical proximity and historic ties are key determinants of foreign investments in Dubai. About 20% of offshore Dubai real estate is owned by investors from India and 10% by investors from the United Kingdom; other large investing countries include Pakistan, Gulf countries, Iran, Canada, Russia, and the United States. These patterns hold when focusing on the most affluent neighborhoods, with the main difference that Indian investments become relatively smaller and Russian investments larger.

Third, a number of conflict-ridden countries and autocracies have large holdings in Dubai relative to the size of their economy, equivalent to 5%–10% of their GDP. This suggests that the official net foreign asset position of a number of low income economies is significantly under-estimated.

Last, by matching properties owned by Norwegians to administrative tax records in Norway, we find that the probability to own offshore real estate rises with wealth, including within the very top of the wealth distribution. About 70% of Dubai properties owned by Norwegian taxpayers were not reported for tax purposes in 2019. These results suggest that the lack of cross-border exchange of information on real estate ownership is a significant issue for tax enforcement.

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