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AI Arbitrage in Purchases and Lending: Information-Driven Real Estate Deals

After much delay, artificial intelligence (AI) is finally emerging in commercial real estate (CRE). In the next few years, purchase and finance decisions will be increasingly influenced by AI. Initially, the most cutting-edge AI technology will be concentrated in the hands of sophisticated real estate investors and lenders that join forces with the technology developers.

This article examines the potential impact of new AI technology on acquisitions, loan originations and other CRE transactions. The use of AI will likely increase fluidity in the real estate market, though not necessarily transparency. With the caveat that it's too soon to speak of any clear trends, this article considers the role of new AI-driven investment firms and the tech companies that will serve as their AI investment managers.

AI will also create opportunities for a type of arbitrage in real estate deals. Arbitrage generally refers to the simultaneous purchase and sale of a security or asset in two different markets to take advantage of price differences. But for purposes of this article, arbitrage is used in a broader sense to refer to the purchase or finance of an asset on favorable terms as a result of having access to better, more complete information than competitors or an existing owner. The relevant markets here are not public exchanges but are instead information based. For example, an AI-equipped investor may discover hidden potential upside or value, such as prospects for increasing rents or repositioning a property for a higher and better use. By capitalizing on the special knowledge, an investor can significantly increase the potential returns or resale price.

1. A Notorious Laggard

The real estate industry has notoriously lagged in adopting new technologies. Many developers and lenders still make most investment decisions through a combination of Excel spreadsheet analysis and gut instincts. The slow progress in real estate to utilize new technologies is partly due to its granular and local nature. Each jurisdiction has its own laws, customs, practices and recordkeeping systems. Over the past few decades, real estate investment has become more corporatized. Still, the industry is perceived as old school and traditional, powered more by handshakes than data.

But even with this personal touch, sourcing and closing real estate transactions is often difficult and time consuming. In making real estate decisions, investors are unable to act with the level of speed that's prevalent for hedge funds and stock trading. Steve Weikal, the Head of Industry Relations at the MIT Real Estate Innovation Lab, described in an interview with us that there is a tremendous amount of friction and opacity in the real estate business, which has benefited the traditional players greatly. It's therefore not surprising that the old guard will mount resistance against any industry disruption caused by AI's deployment.

Yet, due to the decentralized and illiquid nature of real estate, fund managers have trouble finding suitable prospects on which to unload their dry powder, which refers to undrawn but committed investment cash. The amount is estimated by data firm Preqin to be nearly $300 billion. The first movers in real estate AI with a demonstrated proof of concept will therefore have access to large reserves of capital. But given the sluggish history of progress in real estate, buy-in or acceptance by the industry at large will not happen overnight.

2. AI Technology

Although late to the game, excitement about innovation is starting to surface in the real estate industry, along with a fear of missing out. According to research by the Oxford Real Estate Initiative at the University of Oxford, investments in real estate technology or proptech have seen a marked increase in recent years. Somewhat of a catch-all term, proptech refers both to (a) smart real estate technology (such as the internet of things and virtual tours of space using augmented reality software), as well as (b) AI, predictive analytics, blockchain and other financial technology or fintech as applied to real estate. Popular applications, such as Zillow, assist brokers, owners and anyone with a smart phone or computer in purchasing and leasing individual residential properties. While still in the nascent stage, AI and other proptech have also been recently developed to facilitate commercial transactions.

On the more corporate end, asset management firms will use machine learning and big data to exploit market inefficiencies in buying and selling mortgage-backed securities and other indirect real estate investments. For example, Reuters recently reported that Pagaya Investments, an AI-driven asset manager that has focused on fixed income and consumer credit, has raised institutional money to expand into real estate and mortgages.

Closer to the dirt, or the ground floor, other tech startups are building and aggregating databases of records and key metrics for numerous individual properties. An example is Compound Asset Management, which uses an AI-based platform to locate and purchase condominium units and apartment buildings in New York City. Another example is Skyline AI, which has access to

an immense national database of property information and plans to focus initially on multifamily assets. Founder and CEO Guy Zipori explained in an interview with us that Skyline AI has developed a proprietary algorithm that generates key insights from the datasets as to both valuation and timing considerations.

By combining big data with predictive analytics, tech companies are able to predict the value of an asset and rent amounts. Perhaps more significantly, an owner can use AI to predict the optimal time to market for sale or seek financing for a property. AI-driven investment strategies can also be applied proactively by a prospective purchaser to make an unsolicited offer for an off-market asset. By reverse engineering existing data on the ownership and financing structure for a property, it can be determined whether the existing owner will likely be willing to sell a particular property. Similar to the targeting abilities of Google and Amazon, as explained by Weikal, real estate tech companies will be able to learn from people's behavior and uncover off-market sellers who don't even know they are sellers yet. An actual example of this occurred in June 2018 when Skyline AI and an undisclosed operating partner acquired two residential complexes in Philadelphia that were identified by a proprietary algorithm as being mismanaged.

The AI system doesn't need to know everything about an identifiable property, portfolio or submarket in order to maintain a competitive advantage. It's only necessary to have access to more data than is available to the typical real estate investor based on traditional sources, such as appraisals and public property records. Still, to have greater impact, a technology company must be able to create, or synthesize, a full picture based on incomplete information.

For instance, if the AI system has 95 percent of the relevant data with respect to an asset but is missing the remaining 5 percent, then the missing portion will be synthesized to create a complete picture. According to research on the human blind spot by V.S. Ramachandran, the Director for the Center for Brain and Cognition at the University of California San Diego, this is akin to how humans automatically fill in the missing gaps of images based on what they know or believe to be true in order to perceive a single, integrated image. But a key distinction is that humans, although they can strive to work around their blind spots, can't actually reduce them.

In contrast, AI can learn to narrow its own blind spots. As new information about a property or market becomes available, the information previously synthesized by the AI will be retested and validated or updated as needed. In theory, each successive sequence or image will be more accurate than that which preceded it. Although it will never be perfect, an AI system will become more proficient at plugging in missing pieces and resolving discrepancies in data through machine learning.

3. AI-Driven Investment Firms

A typical business model for AI technology is the licensing of technology to customers on a subscription or software-as-a-service basis. For example, Ross Intelligence, which uses IBM Watson, offers its services to any law firm willing to pay a monthly fee for a more efficient way to research cases and prepare for litigation. A volume-based approach has also been adopted for real estate transactions by tech companies such as Enodo, which maintains an automated underwriting platform for lenders of multifamily assets that is generally available to any paying customers.

Other tech companies are more selective in their clientele. For example, as described by Zipori, rather than having customers in the conventional sense, Skyline AI forms strategic partnerships with select equity and real estate investors and lenders. By offering the proprietary technology and substantial know-how to any paying customers, the alpha or competitive edge would be lost, market prices would soon converge and there would be less opportunities for arbitrage.

AI tech companies with a more exclusive business model will become more direct and active players in the transactional world, compared to those with a subscription or service provider model. While we caution that we do not yet have sufficient examples from actual practice, an AI tech company could act as a real estate developer in its own right or form a joint venture with a local operator for the purchase of an individual property or portfolio.

But greater resources will be pooled to form equity or debt funds for which an AI tech company serves as the investment or asset manager. Within the next few years, it's anticipated that private funds will be formed through contributions by institutional investors and real estate operators and lenders. This is in addition to venture capital previously raised through several funding rounds. There will also be publicly listed funds. For example, as of publication of this article, Compound is preparing for an initial public offering with respect to its Manhattan Cityfund, which will purchase residential properties.

Properties, portfolios or loans that are acquired by an AI-driven investment vehicle will generally be regarded as assets under management. Much as an operating partner handles day-to-day management and administrative matters for a traditional real estate venture, a tech company will render AI-based investment advice for the project or portfolio. Presumably, the investment manager will have the right to initiate certain transactions that fall within pre-approved parameters.

Different investment vehicles will focus on different asset classes, such as multifamily, retail or office, and different equity or debt positions, such as senior or mezzanine debt or preferred equity. Each investment vehicle will also have a certain risk profile. The AI technology will take into account desired return and other financial terms in sourcing and underwriting deals.

Compared to traditional investment firms, an AI-driven debt fund could very well be better positioned to determine who needs a loan and when, using insights gleaned from existing databases and synthesized information. With a higher degree of accuracy, the AI-driven investment firm could also determine the most suitable type of financing, such as bridge financing versus permanent financing and interest-only versus amortization. Again, the above descriptions are based on potential developments, and there will not be an established record on the subject for some time.

4. Arbitrage Opportunities

In a form of arbitrage, AI-driven investment vehicles will use their technology to exploit differences in property valuation and information. For example, with a valuation based on AI, it can be quickly and accurately determined whether a particular property or portfolio is undervalued or overvalued by an owner or competitor that is utilizing traditional means of valuation. The AI-driven investment firm, acting as an arbitrageur, can then close the gap on the undervalued property through its purchase and subsequent sale or investment.

It will not be necessary for the transactions to be simultaneous in order to reap a profit. Due to high transaction costs, extensive paperwork, required approvals and other factors, the sale and resale of the same property or portfolio usually will not occur at the same time. A much shorter turnaround period, however, may apply in the case of publicly traded investments in real estate companies.

Some of the opportunities identified by these investment firms would otherwise go missed in the absence of AI. Whereas conventional financial modeling and underwriting for real estate deals takes days or weeks, sophisticated AI will reduce the time period to a matter of seconds. An AI-driven investment vehicle likewise can consider a much greater number of potential deals in a much shorter period of time.

At the same time, with increased predictive power, the investment vehicle will only need to consider a relatively small number of assets before finding a suitable prospect. This includes assets that an owner is willing to sell or refinance in the near future. In these ways, real estate transactions will begin to more closely resemble the trading of stock, though there will still be important differences.
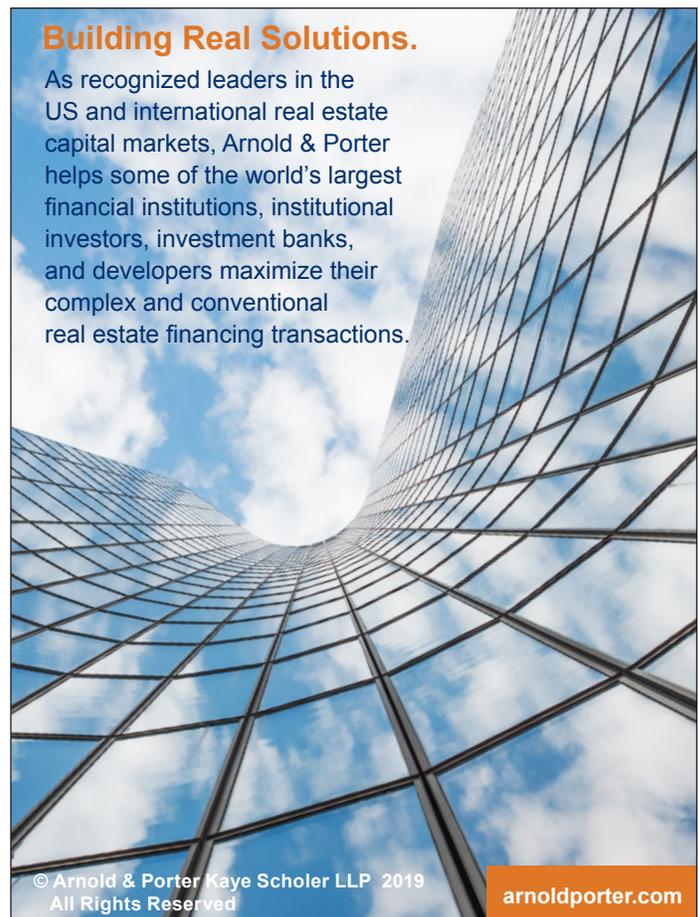
5. Changes to Come

AI will change how real estate transactions are sourced and negotiated. In some cases, the users of AI will not need or want to share the analysis or predictions. In other cases, it may be necessary or desirable to share certain segments of AI analysis in order to obtain more favorable terms. The most obvious example is showing the AI's predicted valuation to support a higher or lower purchase price. As another example, in underwriting a loan, predictions on rent or condominium unit sales will be relevant in determining interest rates and the scope of guaranty coverage.

It's not yet clear how excerpts of AI analysis will be shared. It's unlikely that counterparties will accept such results as conclusive without seeing reasonably detailed back-up. But AI firms will not want to disclose their trade secrets or reveal the methodology behind their proprietary technology. Eventually, the programs may become too complex to be fully understood even by their own data scientists. The AI algorithms will thus become a black box that humans are unable to unpack.

In contrast, a formal appraisal tells a story about a property in a format that is easily understood by owners and potential investors. Traditional third-party reports will therefore still remain relevant for underwriting and investment decisions, at least for the foreseeable future. Of course, the roles of appraisers, brokers and other consultants will need to evolve in response to new technologies.

It's a matter of great speculation whether, and when, a technological singularity will render human advice obsolete. The current consensus within the technology community is that AI and humans working together are better than either alone. Accordingly, decisions whether to buy, sell or finance a property are best made through a combination of AI input and human judgment. An AI program may propose a certain investment decision, but, for now, a human advisory board will have the final say.