PGIM REAL ESTATE

INVESTMENT RESEARCH

COMPARING PREVIOUS DOWNTURNS

June 2020

This short paper expands upon content first published in PGIM Real Estate's 2020 Global Outlook report: *Real Estate During a Crisis.*

Introduction

The outbreak of COVID-19 has quickly turned into a severe shock. The decline in economic output recorded in the first half of 2020 makes the fallout from the 2008 global financial crisis seem mild in comparison, while in real estate markets, transaction volume has slowed sharply and values are under pressure — notably in retail and hotels.

As we head into the second half of the year, there are some signs that activity is normalizing, yet the situation continues to evolve rapidly. The highly uncertain nature of the current crisis — in which public health concerns and policy measures are intertwined with unprecedented economic and financial stresses — makes predicting its path a particularly difficult task.

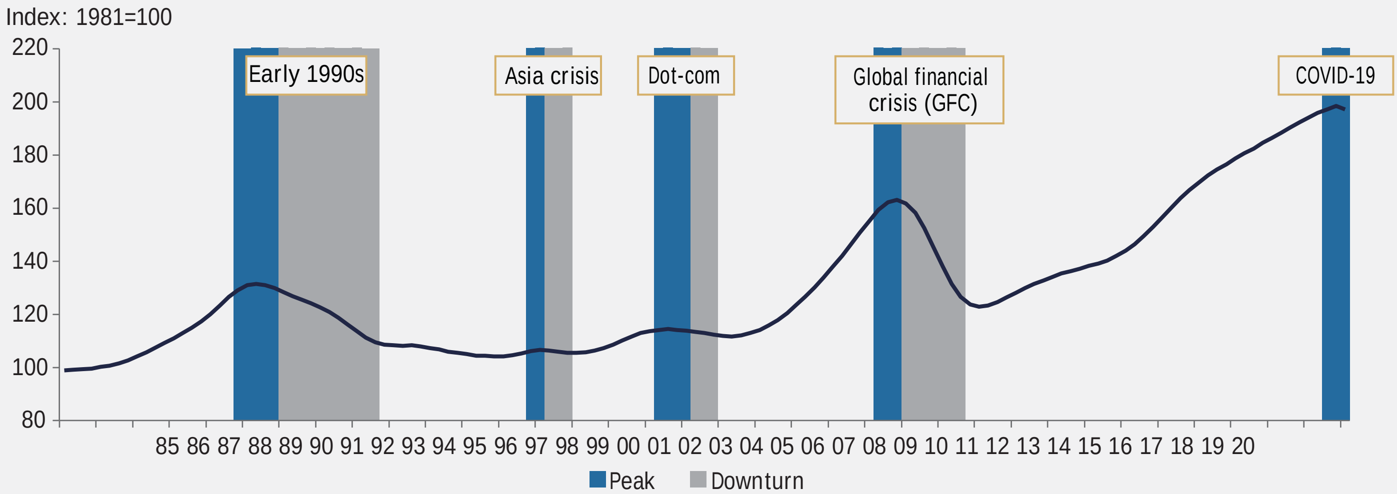
Despite obvious differences between the current situation and circumstances that influenced previous downturns, lessons can be drawn from history and certain observations can help make sense of events as they unfold.

Causes and Effects Are Different Every Time

Causes and effects of real estate downturns vary significantly between cycles, as demonstrated by a simple glance at the major downturns recorded since the early 1990s (exhibit 1).

Exhibit 1: Global Real Estate Value Cycle

Estimated Global All Property Real Prime Capital Value Index



Sources: CoStar, Cushman & Wakefield, JLL, PGIM Real Estate. As of June 2020.

For Professional Investors only. All investments involve risk, including the possible loss of capital.

At an aggregate level, there have been two major financial crises — one contained in Asia in 1998 and one truly global and system-wide in the form of the 2008 global financial crisis — a long and drawn-out correction that was exacerbated by oversupply in the early 1990s and a temporary global demand shock that came in the aftermath of the dot-com-related financial market turmoil and U.S. recession in the early 2000s.

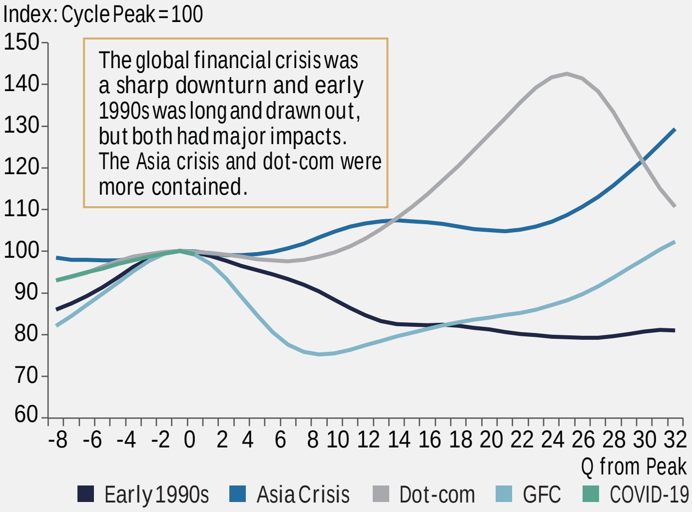
The Impact on Markets Can Vary Significantly

In exhibit 2, each cycle has been rebased at its peak to allow direct comparison of the downturn paths, demonstrating that the impact on global real estate values varies significantly. (See also the detailed appendix table for a breakdown of value movements by major sector and region.)

The global financial crisis led to a sharp correction and affected almost every market around the world to some extent. A relatively swift recovery in values was led by both Asia Pacific — which benefited from a strong structural growth story — and the United States, where policy makers rapidly provided economic stimulus and real estate lenders quickly regrouped after the banking crisis in 2008.

Exhibit 2: Comparison of Value Movements Across Cycles

Global All Property Real Prime Capital Values Index by Downturn



Summary of Performance by Downturn

	Peak-to-Trough Value Movement			Avg. Correlation
	Real Values, %	Duration, Q	% Markets Affected	Five Years Prior to Peak
Early 1990s	-20.8%	27	97%	0.82
Asia crisis	-0.9%	5	8%	-0.15
Dot-com	-2.4%	7	69%	-0.31
GFC	-24.7%	9	99%	0.83
COVID-19	–	–	–	0.43
Average	**-12.2%**	**12**	**72%**	**0.30**

Sources: CoStar, Cushman & Wakefield, JLL, PGIM Real Estate. As of June 2020.

In contrast, the overhang from supply meant that markets in Europe and the United States were stuck in the doldrums for many years in the 1990s. Dot-com and the Asia crisis were ultimately contained events that had limited wider-market contagion, affecting a much lower proportion of markets and sectors.

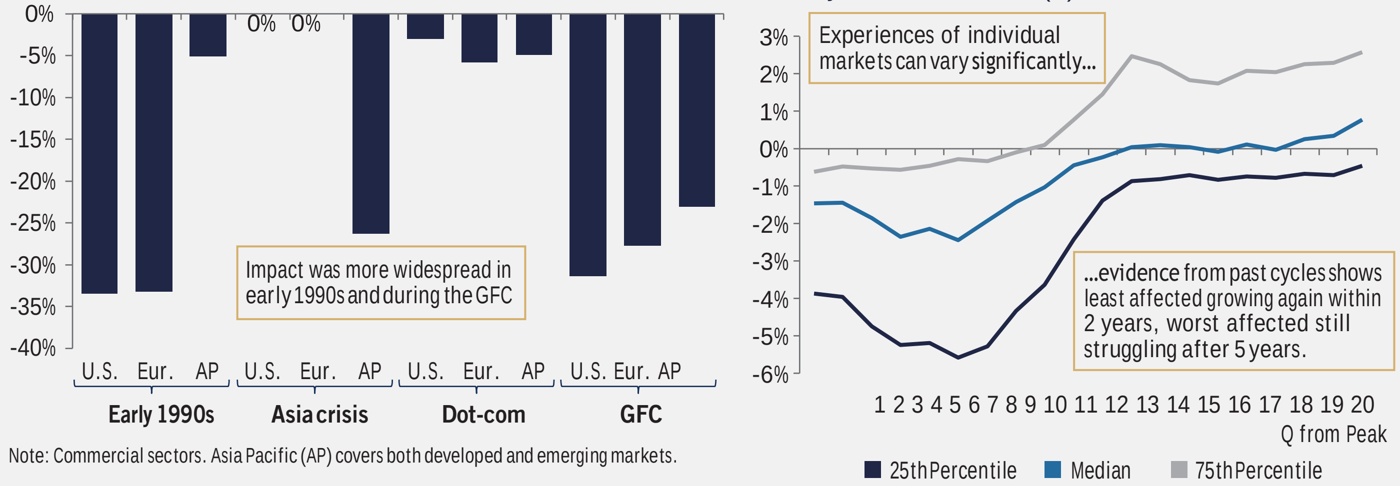
Clearly, the aggregate impact of a downturn is milder when contained to a limited set of markets — and also when correlations are low. A more diverse range of performance leading up to a crisis — demonstrated by a lower correlation coefficient among major markets — is consistent with a less widespread impact because markets are not simultaneously vulnerable to the same factors.

During both the early 1990s and the global financial crisis, on a peak-to-trough basis, major regions and sectors were all similarly affected in aggregate (exhibit 3). However, even if correlations are elevated — in that values are moving in a similar direction across markets and sectors — market performance will vary, at least in such factors as magnitude of impact and timing.

Exhibit 3: Assessment of Downturns and Recoveries

Peak-to-Trough Value Movements by Region (%)

Real Quarterly Prime Capital Value Growth Following a Peak by Market Percentile (%)



Note: Commercial sectors. Asia Pacific (AP) covers both developed and emerging markets.

Sources: CoStar, Cushman & Wakefield, JLL, PGIM Real Estate. As of June 2020.

By looking more closely at individual markets, it is clear that the key aspects of variation relate to the magnitude of the initial decline and how long it takes for a recovery to get under way.

A simple historical analysis shows that most markets will report declining values, in real terms, for an average of about three years following a peak. However, while some markets are already reporting a strong bounce-back in values at that point, the bottom quartile of markets are still reporting modestly declining real values five years later.

The most-likely cause of a prolonged downturn is either sustained financial distress, as suffered by markets in the eurozone periphery after the global financial crisis, or an overhang of supply, which weighed on most major markets in Europe and the United States in the early 1990s.

For portfolio construction, it is important to note that after three years, more than 50% of markets are likely to still be recording negative quarterly real value growth, so building exposure to recovering sectors and markets can generate significant outperformance.

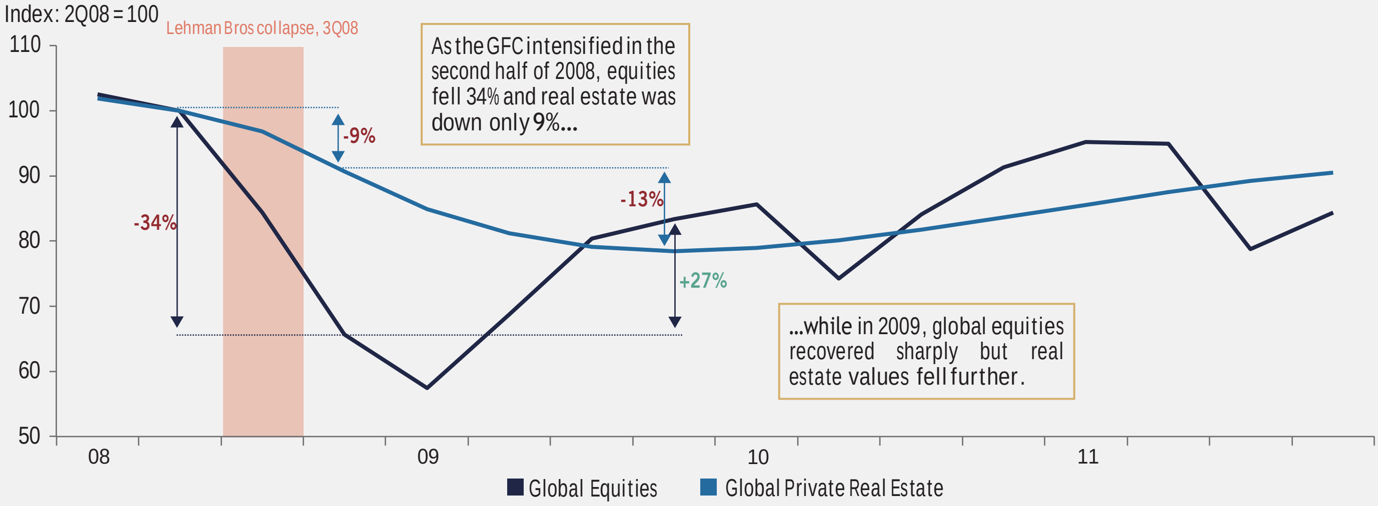
Real Estate Values Typically Lag

The severity of the economic impact of COVID-19 — and its knock-on effects on real estate users, occupiers and owners — point toward the sharp correction during the global financial crisis being a more appropriate historical comparison than are the milder examples.

One notable feature of the aftermath of the global financial crisis was a lag in the recorded performance of real estate assets compared with wider equity markets. Equities lost about a third of their value in the second half of 2008 before staging a strong rebound in 2009 (exhibit 4). In contrast, the initial impact of the crisis on private real estate assets was modest but became much more severe in 2009 — even after the equity market rebound was well under way.

Exhibit 4: Real Estate and Equity Market Performance During the Global Financial Crisis

Equity Market and Real Estate Value Indexes



Sources: Bloomberg, CoStar, Cushman & Wakefield, JLL, PGIM Real Estate. As of June 2020.

This pattern reflects several factors, including natural lags in the valuation process, a lack of evidence for appraisers to accurately lower or raise values when transaction volume slows and the time it takes for real estate cash flow — much of which is based on fixed lease contracts — to adjust to weaker economic conditions.

All of those factors are present today. Given that global equity markets staged a significant rebound in May and June as sentiment improved, it is important to be alert to the fact that real estate values can still come under pressure — especially if the current severe recession starts to weigh on operating fundamentals, vacancy and income receipts.

Some Causes for Optimism?

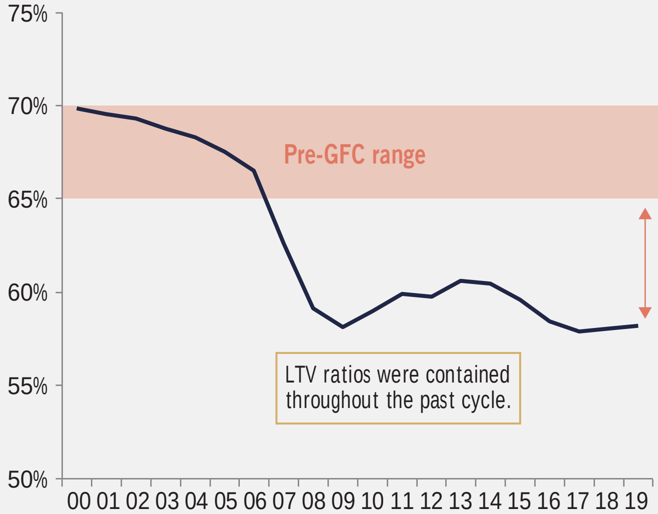
The COVID-19-induced downturn looks set to be different again. The key variant is that as a public health crisis, its cause is truly exogenous rather than, as in previous downturns, stemming from an endogenous system failure such as excess supply or excessive financial imbalances.

In addition, several factors provide support for real estate performance that had seldom featured in past downturns — especially to begin with. First, COVID-19 hit when interest rates were already low, meaning that there was no lag between a drop in sentiment and policy support being in place. Policy action has already been swifter, more sizable and better coordinated than during 2008 and 2009.

Second, use of leverage through the past cycle was low, meaning that investors in general have a better capital buffer now than they did in the early stages of the global financial crisis (exhibit 5). Lenders have more breathing room on covenants for the time being, and there is still plenty of capital looking to find a home in real estate, as demonstrated by the elevated fundraising numbers recorded through the end of the first quarter.

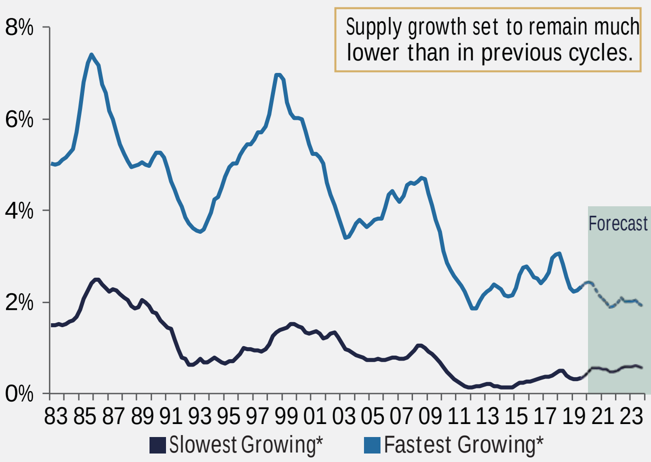
Exhibit 5: Assessment of Supply and Leverage

Global Average LTV Ratio for a Core Office Deal (%)



Sources: CoStar, Cushman & Wakefield, JLL, PGIM Real Estate. As of June 2020.

Supply Growth Range Across All Sectors and Markets (% p.a.)



* *Slowest Growing* and *Fastest Growing* refer to upper and lower quartile among our sample of global office, retail, logistics and apartment markets.

And third, supply growth is much more contained than in the past. Even in the top quartile of markets ranked by growth in stock, only 2% of stock is expected to be added each year compared with an average of 6% per year recorded ahead of previous downturns.

In the near term, vacancy looks certain to increase due to rapidly rising unemployment and the inevitable stress of recession on smaller firms, but it is reassuring that the effects are not set to be exacerbated by a wave of new space deliveries.

Concluding Remarks

The severity of the impact of COVID-19 on the global economy points to a widespread and significant effect on real estate markets. In this respect, there are clear parallels with the global financial crisis, although an analysis of history suggests a wide range of possible outcomes.

There are some clear differences when compared with previous downturns too. The COVID-19 shock is exogenous and policy action is helping support values, while the supply cycle was muted in the run-up. However, any effect on real estate tends to lag wider financial market sentiment, so it is still early days. Even mild downturns tend to weigh on values for two or three years, with many markets feeling the effects for even longer.

There is still much uncertainty as to how the current crisis will play out. However, analysis of past real estate downturns allows an assessment of the parameters for what comes next, helping investors navigate their way through today's challenging market conditions.

AUTHOR

Greg Kane
Executive Director
Head of European Investment Research

ADDITIONAL KEY CONTACTS

Dr. Peter Hayes
Managing Director
Global Head of Investment Research

Lee Menifee
Managing Director
Head of Americas Investment Research

Dr. Cuong Nguyen
Executive Director
Head of Asia Pacific Investment Research

APPENDIX

Estimated Peak-to-Trough Real Prime Capital Value Movements by Cycle

Region	Sector	Early 1990s	Asia crisis	Dot-com	GFC
Asia Pacific	Office	-14%	-36%	-10%	-29%
	Retail	n.a.	-22%	-2%	-12%
	Logistics	n.a.	n.a.	-5%	-29%
	Commercial	-5%	-26%	-5%	-23%
	Apartment	n.a.	-21%	-9%	-11%
Europe	Office	-49%	-	-18%	-33%
	Retail	-20%	-	-	-26%
	Logistics	-33%	-	-9%	-30%
	Commercial	-33%	-	-6%	-28%
	Apartment	n.a.	-	-	-11%
United States	Office	-38%	-	-13%	-35%
	Retail	-38%	-	-1%	-28%
	Logistics	-25%	-	-	-32%
	Commercial	-33%	-	-3%	-31%
	Apartment	-27%	-	-	-23%
Global	Commercial	-21%	-1%	-2%	-25%

Note: “n/a” denotes data not available, while “-” means no downturn recorded.

Sources: CoStar, Cushman & Wakefield, JLL, PGIM Real Estate. As of June 2020.

Important Information

PGIM is the primary asset management business of Prudential Financial, Inc (PFI). PGIM Real Estate is PGIM's real estate investment advisory business and operates through PGIM, Inc., a registered investment advisor. PGIM, their respective logos as well as the Rock symbol are service marks of PFI and its related entities, registered in many jurisdictions worldwide. PFI of the United States is not affiliated in any manner with Prudential plc, incorporated in the United Kingdom or with Prudential Assurance Company, a subsidiary of M&G plc, incorporated in the United Kingdom. In the United Kingdom and various other jurisdictions in Europe, certain investment activities are carried out by representatives of PGIM Limited, which is authorised and regulated by the Financial Conduct Authority of the United Kingdom (registration number 193418). PGIM Real Estate, which is affiliated to PGIM Limited, is the real estate investment management business of PGIM, Inc. the principal asset management business of Prudential Financial, Inc. ('PFI') of the United States. PGIM Limited is registered in England No. 3809476 VAT no. 447 1835 36, Registered Office, Grand Buildings, 1-3 Strand, Trafalgar Square, London WC2N 5HR. The information provided in the document is presented by PGIM (Singapore) Pte. Ltd.), a Singapore investment manager that is registered with, and licensed by the Monetary Authority of Singapore. In Hong Kong, this material is distributed by PGIM (Hong Kong) Limited, a regulated entity with the Securities and Futures Commission in Hong Kong to professional investors as defined in Part 1 of Schedule 1 of the Securities and Futures Ordinance. This material is distributed by PGIM Real Estate Luxembourg S.A., a regulated entity by the Commission de Surveillance du Secteur Financier (CSSF). In Germany, this material is distributed by PGIM Real Estate Germany AG, a regulated entity by the Bundesanstalt für Finanzdienstleistungen (BaFin).

These materials are for informational or educational purposes only. The information is not intended as investment advice and is not a recommendation about managing or investing assets. In providing these materials, PGIM is not acting as your fiduciary.

These materials represent the views, opinions and recommendations of the author(s) regarding the economic conditions, asset classes, securities, issuers or financial instruments referenced herein. Distribution of this information to any person other than the person to whom it was originally delivered and to such person's advisers is unauthorized, and any reproduction of these materials, in whole or in part, or the divulgence of any of the contents hereof, without prior consent of PGIM Real Estate is prohibited. Certain information contained herein has been obtained from sources that PGIM Real Estate believes to be reliable as of the date presented; however, PGIM Real Estate cannot guarantee the accuracy of such information, assure its completeness, or warrant such information will not be changed. The information contained herein is current as of the date of issuance (or such earlier date as referenced herein) and is subject to change without notice. PGIM Real Estate has no obligation to update any or all of such information; nor do we make any express or implied warranties or representations as to the completeness or accuracy or accept responsibility for errors. These materials are not intended as an offer or solicitation with respect to the purchase or sale of any security or other financial instrument or any investment management services and should not be used as the basis for any investment decision. Past performance is no guarantee or reliable indicator of future results. No liability whatsoever is accepted for any loss (whether direct, indirect, or consequential) that may arise from any use of the information contained in or derived from this report. PGIM Real Estate and its affiliates may make investment decisions that are inconsistent with the recommendations or views expressed herein, including for proprietary accounts of PGIM Real Estate or its affiliates.

The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients or prospects. No determination has been made regarding the suitability of any securities, financial instruments or strategies for particular clients or prospects. For any securities or financial instruments mentioned herein, the recipient(s) of this report must make its own independent decisions.

Conflicts of Interest: Key research team staff may be participating voting members of certain PGIM Real Estate fund and/or product investment committees with respect to decisions made on underlying investments or transactions. In addition, research personnel may receive incentive compensation based upon the overall performance of the organization itself and certain investment funds or products. At the date of issue, PGIM Real Estate and/or affiliates may be buying, selling, or holding significant positions in real estate, including publicly traded real estate securities. PGIM Real Estate affiliates may develop and publish research that is independent of, and different than, the recommendations contained herein. PGIM Real Estate personnel other than the author(s), such as sales, marketing and trading personnel, may provide oral or written market commentary or ideas to PGIM Real Estate's clients or prospects or proprietary investment ideas that differ from the views expressed herein. Additional information regarding actual and potential conflicts of interest is available in Part 2 of PGIM's Form ADV.

Occurrences of epidemics, depending on their scale, may cause different degrees of damage to national and local economies that could affect the value of the Fund and the Fund's underlying investments. Economic conditions may be disrupted by widespread outbreaks of infectious or contagious diseases, and such disruption may adversely affect real estate valuations, the Fund's investments, and the Fund and its potential returns. For example, the continuing spread of COVID-19 (also known as novel coronavirus) may have an adverse effect on the value, operating results and financial condition of some or all of the Fund's investments, as well as the ability of the Fund to source and execute target investments. The progress and outcome of the current COVID-19 outbreak remains uncertain.

© 2020 PFI and its related entities.

留意事項

※ 本資料はPGIMリアルエステートが作成したものです。PGIMリアルエステートは、米国SECの登録投資顧問会社であるPGIMインクの不動産運用ビジネス部門として、PGIMインクを通じて業務を行 っています。

※ 本資料は、特定の金融商品の勧誘又は販売を目的としたものではありません。また、本資料に記載された内容等については今後変更されることもあります。

※ 記載されている市場動向等は現時点での見解であり、これらは今後変更することもあります。また、その結果の確実性を表明するものではなく、将来の市場環境の変動等を保証するものでもありません。

※ 本資料に記載されている市場関連データ及び情報等は信頼できると判断した各種情報源から入手したものですが、その情報の正確性、確実性について当社が保証するものではありません。

※ 過去の運用実績は必ずしも将来の運用成果等を保証するものではありません。

※ 本資料は法務、会計、税務上のアドバイスあるいは投資推奨等を行うために作成されたものではありません。

※ 当社による事前承諾なしに、本資料の一部または全部を複製することは堅くお断り致します。

※ "Prudential"、"PGIM "、それぞれのロゴおよびロック・シンボルは、プルデンシャル・ファイナンシャル・インクおよびその関連会社のサービスマークであり、多数の国・地域で登録されています。

※ PGIMジャパン株式会社は、世界最大級の金融サービス機関プルデンシャル・ファイナンシャルの一員であり、英国プルーデンシャル社とはなんら関係がありません。

PGIMジャパン株式会社
金融商品取引業者　関東財務局長（金商）第392号
加入協会 一般社団法人 投資信託協会 、一般社団法人 日本投資顧問業協会
PGIMJ73611