IVG Research LAB 4/2012

Infrastructure I: Real Estate Reloaded or A Separate Asset Class?

IVG Passion for Real Assets

Dear Readers,

The motivation behind publishing two editions on "infrastructure" at the same time does not really come as a surprise. Especially since interest in this subject and investments in this "hardware" is rising globally from quarter to quarter. Nonetheless, market information on this "asset class" is not increasing at the same rate. A number of traditional real estate investors are now looking over at this neighbouring sector and attempting to work out an investment profile. Not least, this development reflects the global challenge facing all investors in search of portfolio stability, longevity of assets and an expansion of their traditional investment range. The term "risk hedging" should also be mentioned at this juncture. An ideal balance between opportunity and controlling risk, so it would seem. However, there is no "one" infrastructure investment. We have defined six different infrastructure clusters comprising transport, communications, energy, institutional infrastructure, social infrastructure and the infrastructure of utilities and disposal. The risks and returns therefore vary depending on the respective submarket. Nonetheless, one thing they all have in common is the stability of the anticipated cash flows. However, the market entry barriers to newcomers are still very high in these segments. We are fundamentally optimistic concerning ongoing market development. The deviation in current infrastructure ratios from target allocations and indeed from optimal allocation implies a strong demand for infrastructure in the coming years. We would therefore like to begin in the first part of our Research LAB with the basic question of the "proximity" of infrastructure and real estate. The question of allocation will then be answered in the second section.

1. Infrastructure – an asset class on the rise

The **attention of institutional investors** has increasingly shifted towards infrastructure projects in recent years: The number of infrastructure funds launched has risen steadily again since 2009 and the aggregate fund volume has remained stable over time. This is due not least to the events of the global financial and economic crisis. Infrastructure investments have characteristics that investors have increasingly been looking for following the experiences of recent years: **safe and stable cash flows** that can be planned in the long term, that are **largely detached from macroeconomic cycles** and that do not correlate to the returns on other investments.

Classic infrastructure projects such as toll roads, ports, airports, telecommunications networks and energy grids frequently have **monopolistic or oligopolistic structures** and are fundamental for the functioning of an economy. Demand for these goods and services should therefore be largely stable and inelastic – resulting in consistent and secure cash flows. The high level of regulation usually involved also promises an additional degree of security in the form of income guaranteed by governments. The renewable energies sector with its guaranteed feed-in compensation is a classic example of this (but the associated political risks should not go unmentioned here). The **pricing power** resulting from the monopoli-

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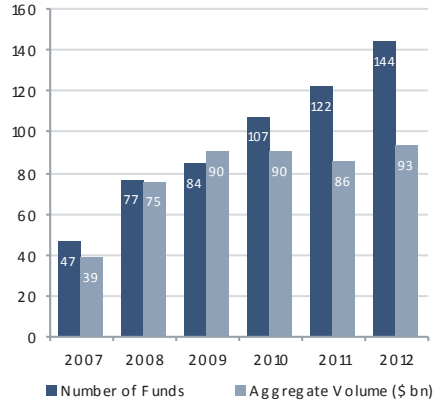
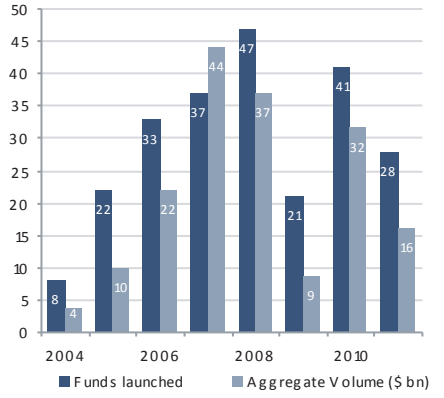
The market for infrastructure funds over time



Source: Preqin (2012), international data

Annual infrastructure fundraising



Source: Preqin (2012), international data

stic structure offers additional potential **protection against inflation** for some infrastructure investments.

Given the rise in risk aversion and the presumably safe profile of infrastructure investments, national and international investors are striving to **increase their portfolio allocations**, as shown by a number of investor surveys. According to Preqin (2012), the average infrastructure allocation of 1,350 investors surveyed around the world is currently 4%. An average allocation of significantly more than 5% is planned.

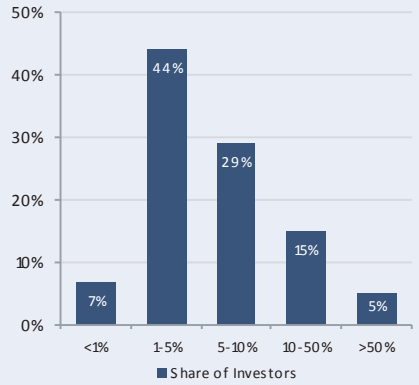
15% of investors questioned are aiming for an allocation of between 10% and 50%, while 5% stated that they even wished to invest more than half of their assets under management in infrastructure investments. Canadian, US and Australian pension funds, not least on account of the **early privatisation events** in their countries, are playing a pioneering role in this and the associated **perception of infrastructure as an asset class** and already hold significant allocations. One example of this is the Canadian pension fund Omers, which has an infrastructure ratio of 15% (as at December 31, 2011). German institutional investors are **still lagging behind** this trend considerably. On average, infrastructure investments account for only 0.7% of their portfolios. According to a report by Steinbeis University (2011), however, this share is set to more than double to around 1.6% over the next three years.

The environment appears good for increasing infrastructure allocations: Public sector debt has risen sharply as a result of extensive aid packages and rescue schemes in the wake of the financial and economic crisis, and many governments are therefore experiencing difficulty in (re)financing on the capital market at favourable conditions. This situation is adding **pressure to governments to consolidate their budgets** in a sustainable fashion. At the same time, however, there is a substantial **need for reinvestment** in (public sector) infrastructure, or for investment in expanding said infrastructure in emerging markets. The OECD estimates the annual investment requirements in the transport, electricity and telecommunications sectors in OECD countries at 2.5% of gross global product. As these investments are only possible with difficulty owing to the public sector's financial problems and debt reduction measures have to be taken at the same time, numerous opportunities are arising for institutional investors for an investment in the infrastructure sector: examples include **privatisation or public private partnerships** (PPP). There are several reasons why the favourable situation on the supply side is being met with rising demand. Firstly, interest rates for financing infrastructure projects are at a relatively low level. Secondly, investors' **increased risk aversion** and the present situation on the financial markets have them on the lookout for alternatives to traditional asset classes, such as equities, government bonds or real estate.

2. Investors in search of investment alternatives

The uncertainty regarding future economic development and the growth in risk aversion on the part of numerous investors is also reflected in the abrupt drop in returns on supposedly safe investments, and shows that

Infrastructure target allocations



Source: Preqin (2012), international data

TOP 10 infrastructure investors

Investor (country)	($ bn)
Omers (Canada)	15.1
CPP Investment Board (Canada)	9.2
Corporacion Andina de Fomento (Venezuela)	8.4
Ontario Teachers' Pension Plan (Canada)	7.9
APG – All Pensions Group (Netherlands)	7.0
TIAA-CREF (US)	6.5
Khazanah Nasional (Malaysia)	6.4
Industrial Development Bank of India (India)	6.1
AustralianSuper (Australia)	5.1
CDP Capital Private Equity Group (Canada)	4.9

Source: IVG Research (2012)

investors are now already accepting low returns if it means security.

For example, prime initial yields on core German office properties are below 5%. The situation is made even more clear when looking at the government bond market. The securities from countries that still have top credit ratings are now hardly suitable as attractive investments in terms of returns. The returns on 10Y German government bonds are at a historically low level of well below 2% – this barely even covers the forecast inflation. The categorisation of German federal bonds as an "interest-free risk" does not feel unjustified under these considerations.

To date, **insurance companies and pension funds** especially have invested a majority of their customers' funds in core properties and AAA government bonds in particular. As government bonds are currently unable to generate the necessary (guaranteed) interest, many institutional investors (particularly insurance companies when investing new customer funds) are facing a serious challenge. Given the market circumstances as they are, it is **no longer possible to pursue the past investment strategy** and a rethink in terms of future asset allocation or a restructuring of portfolios appears essential.

However, significantly increasing the equities allocation is not an alternative for many investors in the long term. While this is expected to result in higher returns on the average, it will also greatly boost portfolio volatility – a situation that many investors prefer to avoid. (Nevertheless, the share of equities in institutional portfolios is expected to rise, though this will be limited. Munich Re, for example, is considering raising its equities ratio from around 2% to 5%).

Bonds from developing and emerging nations could constitute an alternative given their low public debt and attractive returns. However, they often also entail not unsubstantial political risks and uncertainty as regards exchange rate fluctuations. Their allocation should therefore not be too high. While the bonds of southern European nations promise high returns, the precarious financial state of some countries tends to keep investors away with holdings being reduced.

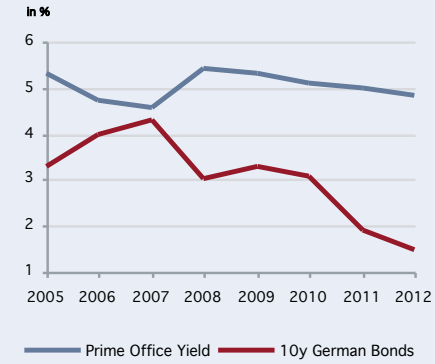
Infrastructure investments could be a solution to the problems described and benefit from the pressure being felt by many institutional investors: They currently offer **higher returns on average** than conservative investments such as core properties or triple-A bonds and have a supposedly **moderate risk profile**. In addition, the stable and plannable cash flows facilitate the use of debt capital without taking an unquantifiable risk. This is why Allianz, for instance, is driving its infrastructure investments forwards and now investing more in wind energy, pipelines and airports.

Push and pull factors for infrastructure investments

Rising Infrastructure Supply
High public debt
High (re)financing pressure on governments
Need for infrastructure reinvestment
Need for infrastructure expansion investment
Rising Infrastructure Demand
Low interest level
Growing risk aversion
Alternative to traditional asset classes

Source: IVG Research (2012)

Falling returns on real estate and government bonds



Source: IVG Research (2012)

3. Real estate vs. infrastructure

Given their "real asset" characteristics, real estate and infrastructure are considered to be very closely related investments and are often mentioned in the same sentence. In spite of the rising perception of infrastructure as an asset class in its own right, some investors do not explicitly distinguish between the two assets in terms of their portfolio allocations, and instead still group infrastructure investments together with their real estate. These can lead to inefficiencies in asset allocation. If for example, a portfolio reaches its prescribed real estate allocation and the two investments are treated as the same, further infrastructure investments are no longer possible in that portfolio, as it already has a sufficient amount of supposedly identical investments.

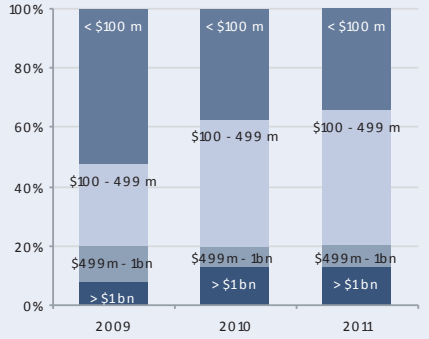
However, the following scenario is also a possibility for restructuring a portfolio: Real estate's reputation as a safe haven suffered during the financial crisis – the **volatility of real estate investments** was surprisingly high, the drop in prices at times considerable. Even if property prices have since recovered on many markets, a large number of investors were surprised by the enormous fluctuations in a supposedly conservative asset class. Given their physical similarity to real estate, many investors see infrastructure as a **familiar and trusted investment**, albeit with greater security on account of their supposedly more conservative risk profile. Especially for risk-averse investors such as pension funds, this aspect of risk reduction therefore makes restructuring their portfolios away from real estate and towards infrastructure a logical step.

However, does it really make sense to substitute real estate with infrastructure with the aim of reducing the risk of the overall portfolio position? To answer this question it first has to be clarified how related the two asset classes really are, and how the two forms can be distinguished from each other. The following section deals with these questions. The statements made mostly relate to core properties and **brownfield infrastructure** (existing infrastructure projects already generating income), as these are the investment forms on which a majority of investors are focusing. Real estate project developments and greenfield infrastructure will not be covered here.

3.1 Real estate vs. infrastructure: similarities and differences

Infrastructure and real estate have a number of things in common. In addition to their **real asset nature**, there are their **high lot sizes** in particular. According to Preqin (2012) the average transaction volume per infrastructure deal is $400 million. The relative share of large-volume infrastructure deals has risen significantly again in recent years. It is assumed that this trend will continue in the coming years owing to privatisation pressure. However, as infrastructure transactions can be performed with

Lot sizes for infrastructure transactions



Source: Preqin (2012), international data

other investors in the form of club deals, or infrastructure investments can be packaged in conventional fund vehicles (listed and unlisted), this does not necessarily have to mean lot size problems.

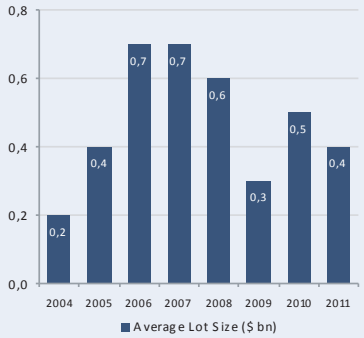
Given the relatively high **transaction costs** (the sale and purchase expenses incurred in the transaction process for infrastructure investments are highly specific to the property and can amount to between 5% and 11% of the property value in total), direct infrastructure and real estate investments (transaction costs vary from country to country and sector; the average for office properties is between 5% and 8%) are only suitable for investors with a **longer-term investment horizon**. While the average holding period for core real estate is five to ten years, the **holding period** for infrastructure properties is frequently dependent on the institutional framework. It is not unusual for concessions for the operation of an infrastructure project to extend to 30 years or longer. If there is no obligation to retain the asset until the concession expires, the investment can be sold for market value at any time. However, there is little valid data available on how long brownfield infrastructure investments are actually held on average.

A further aspect that the two investment classes have in common is the **high significance of the income component**. On average, a majority of the returns on real estate and infrastructure investments do not stem primarily from rising value, but from a regular cash flow. As some infrastructure projects cannot be owned and the concession to utilise them cannot be resold, the significance of the income component tends to be even higher than for real estate investments. Furthermore, for some infrastructure projects (such as wind turbines) there is no residual value, which therefore further enhances the importance of the income component (over a sufficiently long holding period). Technically speaking from a financial standpoint, the duration – i.e. the sensitivity of cash flows to changes in the discount rate – of infrastructure investments should therefore be shorter on average than for real estate investments.

Monopolistic or oligopolistic properties are a defining characteristic of a large number of infrastructure assets and, at the same time, a key feature setting them apart from real estate. Thus, demand for certain infrastructure investments and services (such as highways, cable networks, water lines, power grids) should be relatively stable, which is why the investor should also have a certain pricing power – which is not the case on the real estate market on account of the greater competition. **Cash flows** from infrastructure projects should therefore be subject to less **fluctuation** over time and consequently have a lower risk profile than the cash flows on real estate.

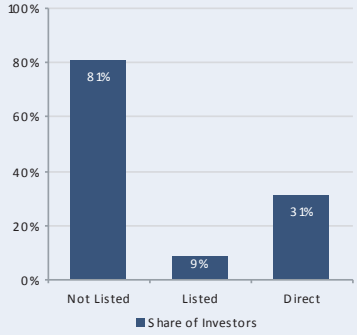
Naturally, the cash flows on real estate are also relatively stable in the short to medium term on account of contractually fixed rents, and are only not generated if a tenant defaults. In the medium to long term, however, severe fluctuations in rent prices are possible. **Real estate prices** therefore tend to be **more volatile** in relation to macroeconomic fluctuations than prices for infrastructure facilities.

Average lot sizes for infrastructure transactions



Source: Preqin (2012), international data

Investment preferences for infrastructure transactions



Source: Preqin (2012), international data

While there is legislation regulating the real estate market (in the residential property sector, for example), the infrastructure sector is subject to far greater **government regulation**. While rents on the property market are determined by supply and demand and can be subject to sometimes significant fluctuation over time, the forecast cash flow for some infrastructure projects is determined by regulation (e.g. by fixed feed-in compensation for wind and solar power plants in Germany) or the government remunerates the operator directly for rendering certain services (such as providing a toll road). As a result, however, the infrastructure market can be characterised by greater **political risk** – as shown by cutbacks in solar subsidies in Spain or Germany's nuclear phase-out.

A further distinction between the two markets is the low **transparency** of the infrastructure market. Research in the field of infrastructure is lagging significantly behind that in real estate, and potential investors have access to far less information and market data. Furthermore, the secondary market for infrastructure funds and the market for securitised infrastructure products are less mature than that for real estate products. At an asset level, the lack of **third-party usability** for infrastructure and its **greater heterogeneity** also distinguish it from real estate. Thus, the characteristics of an investment in the energy sector differ substantially from those of an investment in healthcare or waste management. Distinctions must also be made within a sector: The telecommunications market is an example of a sector that has now been privatised and deregulated. The consequences of this have been competitive pressure and price cuts. So a telephone company does not necessarily have all the features of a classic infrastructure investment. A telephone network, however, does. A highly specific analysis is therefore essential on account of the high heterogeneity.

As has been described, infrastructure and real estate investments have both their similarities and differences. However, the above **differences** are at times **considerable** and therefore also suggest **different investment characteristics**. In particular, the greater significance of the cash flow component for infrastructure investments and their tendentially lesser susceptibility to macroeconomic shocks due to government guarantees or monopolistic (oligopolistic) structures implies a lower average risk for infrastructure investments. On the basis of the theoretical evidence, the conclusion can therefore not be drawn that infrastructure investments are the same as real estate investments, but rather that they are an **asset class of their own** with an **individual risk/return profile** that requires adequate expertise in both asset and portfolio management.

On the basis of the classification as its own asset class, it also cannot be concluded that infrastructure is a suitable substitute for real estate. The lower risk for a number of infrastructure investments also does not mean that replacing real estate with infrastructure reduces portfolio risk. Rather, investors should consider whether infrastructure can supplement a real estate allocation (i.e. diversification), and if therefore the simultaneous allocation of both assets can enhance a portfolio's efficiency. The different cash flow profiles and sensitivities to macroeconomic fluctuations point to this.

Infrastructure vs. real estate
Similarities and differences

Similarities
Real asset
High transactions costs
Long investment horizons
Lot size and market entry problems
Often inflation-protected cash flows
Illiquid asset
Heterogeneous asset
Differences from real estate
Monopolistic/oligopolistic structures
Government regulation/political risks
Ownership often not possible
Often independent of macroecon. development
Higher significance of income component
No third-party usability
Lot size problem even more pronounced
Higher heterogeneity
Lower market transparency

Source: IVG Research (2012)

3.2 Real estate vs. infrastructure: empirical evidence

The results of scientific studies also show that infrastructure and real estate are different asset classes that exist **parallel to each other in a portfolio**. For example, two reports by the University of Regensburg (Dechant and Finkenzeller; 2010, 2012) show that infrastructure and real estate returns do not correlate in either the US or Europe. Even more importantly, adding both assets can significantly reduce portfolio risk on account of their low correlation – including with other investments. A further report based on Australian data (Finkenzeller, Dechant and Schäfers, 2010) confirmed these findings. It has also been shown for the US (Dechant and Finkenzeller, 2010) that the two asset classes have substantial diversification potential in respect of other asset classes, especially in phases of weak equities market performance, without a high correlation in their returns. Thus, **simultaneously adding real estate and infrastructure** appears reasonable in terms of diversification, particularly in phases of economic difficulty.

Correlations Infrastructure – real estate

Europe	0.12
US	0.13
Australia	0.20

Source: Regensburg University (2010, 2012)

Correlations with other asset classes (Europe)

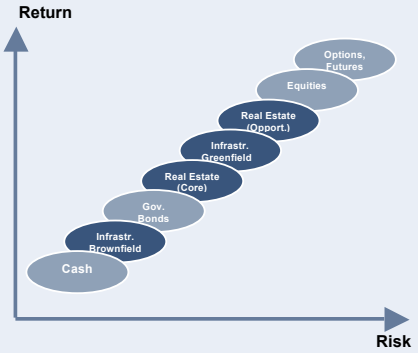
Asset	Infrastructure	Real estate
Bonds	0.03	-0.14
Equities	0.11	0.22
Commodities	0.04	0.15

Source: Regensburg University (2010, 2012)

3.3 Real estate vs. infrastructure: advantage for real estate investors

The many differences between **real estate and infrastructure** suggest that the two classes should be **considered separately** in both asset and portfolio management, that these differences by addressed specifically and that both investment forms should be reported as separate classes. Nonetheless, certain **parallels in some areas** cannot be dismissed, which may mean a competitive edge for classic real estate investors. They have experience with "real assets" and are used to performing large-volume transactions – possibly with a range of investors involved. Furthermore, real estate investors have experience in procuring information and using it in a not very transparent market – an acute problem on infrastructure markets and for infrastructure transactions especially. Given the long investment (concessions) horizon, both real estate and infrastructure should be financed long-term. Real estate investors have the necessary expertise to structure such investments and the associated financing efficiently. Similarly, the illiquidity and heterogeneity of infrastructure investments plus the fact that their valuations are not updated on a daily basis are not new challenges for real estate investors.

Risk/return profiles of infrastructure and real estate



Source: IVG Research (2012)

3.4 Summary

The differing characteristics and cash flow profiles of infrastructure and real estate put each of the assets in a separate investment class. Scientific studies confirm this and show that precisely a combination of infrastructure and real estate can sustainably reduce portfolio risk. They should therefore be reported separately in portfolios and considered differently in asset management. In spite of the numerous differences

between infrastructure and real estate, real estate investors have advantages in acquiring and managing infrastructure as they are already familiar with the many fundamental characteristics of the asset class from the real estate sector. Naturally, thorough due diligence and an analysis of the features specific to the infrastructure – especially given the heterogeneity of the investment items – remains decisive for the success of an investment.

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