The Attractiveness of 66 Countries for Institutional Real Estate Investments: A Composite Index Approach

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Abstract

We address the attractiveness of worldwide 66 countries for institutional real estate investments by the construction of a composite index. For the index' composition, we refer to the results of prior research on the parameters determining real estate investment activity on an aggregated country level. Our index reveals a country ranking that correlates reasonably with commercial real estate investments as we prove with back-tests over six years. We increase the transparency of market variables for decision-making in global real estate asset allocation and provide the key determinants that shape national real estate markets. The results highlight the strengths and weaknesses of developed, transition and emerging economies and provide guidelines for political improvements to attract international capital to spur real estate investment activity.

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1 Introduction

Institutional investors in international commercial real estate have one key objective: to perform transactions with satisfying risk and return ratios. They look globally to achieve their goals, and set their sights on emerging regions in many cases, attracted by high growth expectations and diversification prospects. In fact, a substantial number of investors have exposure to foreign markets either by direct investments or through intermediaries. Especially for investors in countries with a limited real estate market size, international investing becomes a necessity (Worzala, 1994).

However, building an international real estate portfolio often means venturing into the unknown, where one meets unfamiliar political, legal and economic environments, difficulties to find deal partners, and potentially illiquid exit markets alongside different cultures and languages. Although the expected economic growth and advantages of diversification opportunities might appear attractive, the risk of investing in emerging regions must not be neglected. Prior research submits that commercial real estate exists in countries within a broad institutional context defined by sound economic growth, prevailing depth and liquid capital markets, and a stable political and socio-economic structure. Further, each country's real estate market is conditioned, amongst other criteria, by administrative and regulatory burdens, and by the legal protection of investors. Clearly, these institutional characteristics vary strongly over countries and regions, and gradually over time. However, the differences are important for the analysis of long-term perspectives in institutional investors' asset allocation processes (Worzala, 1994; Worzala and Newell, 1997; Geurts and Jaffe, 1996; D'Arcy and Keogh, 1998 and 1999; Lim, McGreal and Webb, 2006; Chin, Dent and Roberts, 2006; Falkenbach, 2009).

In this paper, we address the international real estate allocation process and propose a composite measure to compare the attractiveness of 66 countries worldwide. We review the literature and search for criteria, which determine both supply and demand for commercial real estate investments in a country. We find 66 data series as proxies for these criteria, aggregate them to the "Global Real Estate Investment Attractiveness Index (Global REIA Index)" and receive a country attractiveness ranking. Via sensitivity analyses, we show that our index is robust with respect to different weighting and aggregation methods and correlates reasonably with commercial real estate investments. We furthermore compare the tracking power of our index with related measures proposed in prior literature and by practitioners. The index structure

allows for benchmarking, and we comment on our results pointing to the strengths and weaknesses of developed, transition and emerging markets.

2 Literature Review

Related research focuses on the determinants of commercial real estate activity in national economies or regional markets based on empirical, survey or conceptual analyses. We group the literature overview into six sub-chapters that reflect the structure of our index, as we will subsequently explain. Each heading represents one of six "key drivers", which we regard important, appropriate and quantifiable to determine the attractiveness of a country for institutional real estate investments.

2.1 Economic Activity

It is intuitive that real estate investment performance is related to general economic activity and prosperity of a region or country. According to the model of DiPascal and Wheaton (1992), a productive economy does positively affect the demand for real estate assets. Chin, Dent and Roberts (2006) conclude from survey data that a sound economic structure and an expected strong and stable economy are perceived to be the most significant factors in the ability of a region to attract foreign real estate investments. Hoskins, Higgins and Cardew (2004) find that GDP growth, inflation and unemployment show significant relations with composite property returns. Chen and Hobbs (2003) find that the size of a country's economy positively affects investment activity, as larger economies are usually more capable of withstanding external economic turmoil and are therefore more stable than smaller economies. Van Doorn, (2003) notes that GDP per capita is commonly used in strategic real estate asset allocation for determining a country's economic level of development. Connor and Liang (2000) argue that over the long term, the impact of technology on real estate has been overwhelmingly positive. As technological advances have increased productivity and wealth, demand for all types of real estate has also increased.

2.2 Real Estate Investment Opportunities

Han (1996) concludes from his survey that real estate investment opportunities, demographic attributes, and the market structure are important selection criteria for investment decisions. The

accessibility of institutional real estate via different ownership ratios is a critical factor in real estate investment due to the close relationship between market entry probability, liquidity risk, and transparency of markets. Ling and Gordon (2003) estimate the availability of higher quality not owner-occupied commercial real estate in a theoretical model. Kurzrock (2007) finds via cross-sectional regression that a high degree of agglomeration has a positive impact on property performance. Obviously, accelerating urbanization, which determines the structure, potential and quality of the real estate environment, plays an important investment decision. This is especially valid for the US, where urban areas are spreading across major regions, pushing up land and building values, and making real estate assets increasingly valuable. Lynn (2007) notes, that improvement in communication and transportation infrastructure facilitates the migration to cities and drives the pace of urbanization, which will support new development. Furthermore, the financial and business service sectors reflect a growing level of sophistication in the service economy and thus, the demand for commercial real estate.

2.3 Depth and Sophistication of the Capital Market

Mueller (1995) argues that the physical real estate market with its capital-intensive nature depends on general international capital flows. Adair et al. (1999) and Adlington et al. (2008) find that viable and sustainable real estate markets require an established liquid capital market, including a stable banking and financial services system. Connor and Liang (2000) argue that public sources of equity capital, primarily as REITs, are particularly important for a vivid real estate investment activity due to the potential to securitize financial claims and to raise capital in the public market at relatively low cost. Additionally, FDI (foreign direct investment) inflow into a country plays an important role for the state of the real estate investment environment. Laposa and Lizieri (2005) show that FDI relaxation for investments in retail businesses has given further boost to the commercial real estate sector. Even so, since commercial real estate assets are often used as collateral within leveraged buyout transactions, Roulac (1996a) notes that private equity investors play an active role in flourishing real estate markets.

2.4 Investor Protection and Legal Framework

Sound legal structures and the protection of property rights influence the attractiveness of countries for any kind of investment activity. Chin, Dent and Roberts (2006) and Lim, McGreal and Webb (2006) find via surveys that particular aspects of the legal framework and legal

regulation are very sensitive for real estate investors' market perceptions. They relate this finding to the immobility of real estate property and to the complexity of real estate transactions. La Porta et al. (1997 and 1998) confirm that the legal environment strongly determines the size and extent of a country's capital market and local companies' ability to receive outside financing. They emphasize the difference between law on books and the quality of law enforcement. La Porta et al. (1997) argue that of the world's four legal systems (English, French, German and Scandinavian) the English common law system is the most suitable to enhance capital market development, while the French system is the least attractive. Glaeser et al. (2001), and Djankov et al. (2003 and 2005) suggest that parties in common-law countries have greater ease in enforcing their rights from commercial contracts. Even so, Knack and Keefer (1995), Mauro (1995), and Svensson (1998) demonstrate that property rights significantly affect investments and economic growth.

2.5 Administrative Burdens and Regulatory Limitations

D'Arcy and Keogh (1998) claim that each country's real estate market is conditioned, amongst other things, by landlord and tenant law, planning law, and urban policy. The burden of doing real estate business and taxation are considered to directly affect the operational efficiencies of any kind of business. Worzala (1994) and Adair et al. (1999) note that this affects foreign investors at a large extent at three times: when investing, operating or exiting a market. McGreal, Parsa and Keivani (2001) argue that regulatory limitations, exchange controls and the repatriation of capital restrain international capital flows and hence, provoke a major source of concern for investors.

2.6 Socio-cultural and Political Environment

Keogh and D'Arcy (1999) argue that countries' national property markets are defined by their socio-cultural and political environment. The socio-political risk comprises social risk and government policy risk and is an indicator of institutional problems in a country's public sector. Lim, McGreal and Webb (2006) as well as Chin, Dent and Roberts (2006) found political stability to be the most important factor underpinning international investor' country choices when entering emerging or transition economies. Solnik (1999) confirms that political risks of foreign investment lower the expected success of international diversification, as even if risks are small, the associated potential loss might be large. Lee (2001) notes that the level of

perceived crime and corruption faced by business within a country can prove a major impediment to the successful implementation of an investment strategy. Geurts and Jaffe (1996) argue that a country's socio-cultural framework is closely related to its political environment influencing the overall investment climate.

2.7   Summary of the Literature Review

The numerous contributions emphasize the difficulty of identifying the appropriate criteria for our index. There is neither consensus about the most important criterion, any weighting, nor ranking, which concludes all mentioned factors in literature.

Indeed, while some of the criteria are more comprehensively discussed, and certainly, of very high relevance, it remains unclear how these criteria interact in combination with a real estate market's investment activity. For example, it is difficult to predict whether the real estate market activity in a country with a high investor protection level is more affected by the liquidity of the national stock market or by regulatory limitations. While the influence of some factors (such as the possibility to utilize the public capital market) is not necessary linked to any specific location (because REITs can be issued and placed abroad), other factors such as socio-cultural and political instabilities or legal issues cannot be evaded.

For the index calculation, it would be ideal to include all the mentioned criteria. However, some of the cited papers focus on particular economies or regions, depending on the data available. Their datasets usually do not cover more countries, and are hardly comparable to datasets that exist for a broader scope. We try to find the best possible proxies for the determined drivers of commercial real estate investment activity, and likewise aim to keep the country coverage at a maximum. Therefore, we summarize the related literature as already expressed by the sub-chapter headings, and identify six main criteria that ultimately determine the attractiveness of a country for real estate investments: Economic Activity, Real Estate Investment Opportunities, Depth and Sophistication of its Capital Market, Investor Protection and Legal Framework, Administrative Burdens and Regulatory Limitations, Socio-cultural and Political Environment. We consider these parameters "key drivers", and base the index structure upon them.

Since none of the key drivers is directly measurable, we regard them as latent constructs and search for data series that adequately express their character. If data series share a common character with respect to their socio-economic sense, we group them in sub-constructs. Overall,

we find 66 individual data series grouped into 31 sub constructs to describe the six latent key drivers and obtain a framework of factors as presented in Figure 1.

Figure 1 Conceptual Framework of Real Estate Investment Attractiveness

1 Economic Activity	2 Real Estate Investment Opportunities	3 Depth and Sophistication of Capital Market	4 Investor Protection and Legal Framework	5 Administrative Burdens and Regulatory Limitations	6 Socio-cultural and Political Environment
1.1 GDP Size (+)	2.1 Institutional Property Estimation (+)	3.1 Stock Market Liquidity (+)	4.1 Investor Protection (+)	5.1 Taxation & Capital Gains Taxation (-)	6.1 Human Development Indicator(+)
1.2 GDP per Capita (+)	2.2 Degree of Urbanisation (+)	3.2 IPO Market Activity (+)	4.2 Security of Property Rights (+)	5.2 Ease of Getting a Construction Permit (+)	6.2 Crime (-)
1.3 GDP Growth (+)	2.3 Urban Population & Growth (+)	3.3 M&A Market Activity (+)	4.3 Quality of Legal Enforcement (+)	5.3 Ease of Registering Property (+)	6.3 Bribing & Corruption (-)
1.4 Working Force (+)	2.4 Quality of Infrastructure (+)	3.4 Debt & Credit Market (+)	4.4 Regulatory Quality (+)	5.4 Ease of Starting a Business (+)	6.4 Political System (+)
1.5 Inflation (-)	2.5 Development of Service Sector (+)	3.5 Access to Private Capital (+)		5.5 Ease of Closing a Business (+)	
1.6 Innovation (+)		3.6 REIT Market (+)		5.6 Foreign Exchange Controls (-)	

Positive/negative sign according to the impact on real estate investment activity.

We refer to the sub-constructs as lower index level (or level 2) and aggregate the individual data series and the constructs to concentrate information on the level of the key drivers. The final step is to aggregate the six key drivers to the overall index.

An important issue is the determination of the weights of the individual data series, constructs and key drivers when aggregating the index. We describe the structure of the constructs, the methodologies for determining the weights and for the index aggregation in the following section.

3 Construction of the Global REIA Index

3.1 Data Sample

The first step of the index construction is the specification of appropriate data series and of the sample of countries to be covered. The selection of our data series is motivated by the previous literature findings. The task is to find adequate measures, which share common characteristics with one of the six identified key drivers for a large country sample, while the country sample is

only determined by the availability of these data series. We deliberately attempt to include as many countries as possible, and present the sample in Table 1.

Table 1 Country Sample

Region	Country Sample (N=66)			
Africa (N=4)	Kenya	Morocco	Nigeria	South Africa
Asia (N=13)	China	Hong Kong	India	Indonesia
	Japan	Malaysia	Philippines	Republic of Korea
	Russian Federation	Singapore	Taiwan	Thailand
	Vietnam			
Australasia (N=2)	Australia	New Zealand		
Eastern Europe (N=13)	Bulgaria	Croatia	Czech Republic	Estonia
	Hungary	Latvia	Lithuania	Poland
	Romania	Slovakia	Slovenia	Turkey
	Ukraine			
Latin America (N=9)	Argentina	Brazil	Chile	Colombia
	Mexico	Paraguay	Peru	Uruguay
	Venezuela			
Middle East (N=6)	Egypt	Israel	Kuwait	Oman
	Saudi Arabia	UAE		
North America (N=2)	Canada	United States		
Western Europe (N=17)	Austria	Belgium	Denmark	Finland
	France	Germany	Greece	Ireland
	Italy	Luxembourg	Netherlands	Norway
	Portugal	Spain	Sweden	Switzerland
	United Kingdom			

The regions are defined by their geographical as well as socio-economical affiliation.

We aim to rely on publicly available and commonly accepted data sets to achieve reproducible and unbiased results. We gathered more than 300 data series for different country samples and present below in Table 2 our final selection of of 66 individual raw data series that allow coverage of the countries presented in Table 1. However, the selection remains arguable: we might include additional data-series, or exchange some of them against alternatives. Contrarily, we might have included too many individual items for the calculation and, hence, over-determine the index. A fewer items could be more appropriate to predict a country's real estate market attractiveness. However, in this paper we want to provide a framework and a methodology to construct a composite measure like ours and want to leave it for further research to optimize the index structure.

Table 2 shows the selected raw data series, their units and sources (respectively, alternative sources if data was not available for all countries) that we use for the calculation of our index. The outline in Table 2 also represents the index structure. The six first-order constructs

correspond to the six key drivers already defined. The criteria of all lower orders are grouped and aggregated to the next superior construct to finally proxy the six latent drivers.

Table 2 Raw Data Sample and Sources

#	Name	Unit	Source
1.	**Economic Activity**		
1.1	Economic Size	[LN USD mn]	Euromonitor International
1.2	GDP per capita	['000 USD per capita]	Euromonitor International
1.3	Real GDP Growth (3 yrs average)	[%]	Euromonitor International
1.4	Unemployment rate	[%]	Euromonitor International
1.5	Inflation, Average Consumer Prices	[%]	International Monetary Fund
1.6	General Innovativeness Index	[-]	INSEAD
2.	**Real Estate Investment Opportunities**		
2.1	Institutional Property Estimation	[LN USD mn]	Euromonitor International
2.2	Degree of Urbanization		
2.2.1	Agglomeration Poles	[number]	United Nations
2.2.2	Housing stock	[LN '000]	Euromonitor International
2.3	Urban Population		
2.3.1	Urban Population	[% of Population]	Euromonitor International
2.3.2	Urban Population Growth	[%]	Euromonitor International
2.4	Quality of Infrastructure		
2.4.1	Density of road network	[km per sq km of land]	Euromonitor International
2.4.2	Quality of road infrastructure	[-]	World Economic Forum 2008/2009
2.4.3	Quality of railroad infrastructure	[-]	World Economic Forum 2008/2009
2.4.4	Quality of air transport infrastructure	[-]	World Economic Forum 2008/2009
2.4.5	Quality of electricity supply	[-]	World Economic Forum 2008/2009
2.4.6	Telecommunication	[per capita]	World Development Indicators
2.5	Services Total Output	[% of GDP]	World Development Indicators
3.	**Depth of Capital Market**		
3.1	Size and Liquidity of the Stock Market		
3.1.1	Stock Market Capitalization	[LN USD mn]	Euromonitor International
3.1.2	Total Trading Volume	[% of GDP]	World Bank (WDI)
3.2	IPO Market Activity		
3.2.1	IPO Market Volume	[LN USD mn]	Thomson One Banker
3.2.2	Number of IPOs	[LN '000]	Thomson One Banker
3.3	M&A Market Activity		
3.3.1	M&A Market Volume	[LN USD mn]	Thomson One Banker
3.3.2	Number of Deals	[LN '000]	Thomson One Banker
3.4	Debt & Credit Market		
3.4.1	Domestic Credit provided by Banking Sector	[% of GDP]	World Bank (WDI)
3.4.2	Ease of Access to Loans	[-]	World Economic Forum
3.4.3	Credit Information Index	[-]	World Bank (Doing Business Database)
3.4.4	Soundness of Banks	[-]	World Economic Forum
3.4.5	Interest Rate Spread	[%]	World Economic Forum
3.4.6	Bank Non-performing Loans to Total Gross Loans	[%]	World Bank (WDI)
3.5	Access to Private Capital		
3.5.1	Foreign Direct Investment, Net Inflows	[LN USD mn]	Euromonitor International
3.5.2	Private Equity Investments	[LN USD mn]	Thomson One Banker
3.6	REITs Market Volume	[LN USD mn]	FTSE EPRA NAREIT Series
4.	**Investor Protection and Legal Framework**		
4.1	Investor Protection		
4.1.1	Disclosure Index	[-]	World Bank (Doing Business)
4.1.2	Director Liability Index	[-]	World Bank (Doing Business)

4.1.3	Shareholder Suits Index	[-]	World Bank (Doing Business)
4.2	Security of Property Rights		
4.2.1	Legal Rights Index	[-]	World Bank (Doing Business)
4.2.2	Property Rights	[-]	Heritage Foundation
4.3	Quality of Legal Enforcement		
4.3.1	Judicial Independence	[-]	Fraser Institute
4.3.2	Integrity of the Legal System	[-]	Fraser Institute, PRS Group
4.3.3	Rule of Law	[-]	World Bank (WGI)
4.4	Regulatory Quality	[-]	World Bank (WGI)
5.	**Administrative Burdens and Regulatory Limitations**		
5.1	Taxation		
5.1.1	Marginal Corporate Tax Rate	[%]	World Bank (WDI)
5.1.2	Profit and Capital Gains Tax	[%]	World Bank (WDI)
5.2	Burden Getting a Construction Permit	[-]	World Bank (Doing Business)
5.2.1	Costs	[% of income per capita]	World Bank (Doing Business)
5.2.2	Number of Procedures	[number]	World Bank (Doing Business)
5.2.3	Duration	[days]	World Bank (Doing Business)
5.3	Ease of Registering Property		World Bank (Doing Business)
5.3.1	Costs (incl. Transfer Taxes)	[% of property value]	World Bank (Doing Business)
5.3.2	Number of Procedures	[number]	World Bank (Doing Business)
5.3.3	Duration	[days]	World Bank (Doing Business)
5.4	Ease of Starting a Business		
5.4.1	Number of Procedures to start a Business	[#]	World Bank (Doing Business)
5.4.2	Time needed to start a Business	[Days]	World Bank (Doing Business)
5.4.3	Cost of Business Start-Up Procedures	[% of Income per Capita]	World Bank (Doing Business)
5.4.4	Min. Capital	[% of Income per Capita]	World Bank (Doing Business)
5.5	Ease of Closing a Business		
5.5.1	Time	[Years]	World Bank (Doing Business)
5.5.2	Cost	[% of Estate]	World Bank (Doing Business)
5.5.3	Recovery Rate [Cents on US$]	[Cents on US$]	World Bank (Doing Business)
5.6	Foreign Exchange Controls	[-]	Heritage Foundation
6.	**Socio-cultural and Political Environment**		
6.1	Human Development	[-]	Euromonitor International
6.2	Crime		
6.2.1	Business Costs of Crime and Violence	[-]	World Economic Forum
6.2.2	Costs of Organized Crime	[-]	World Economic Forum
6.3	Bribing & Corruption		
6.3.1	Bribing & Corruption Index	[-]	Transparency International
6.3.2	Control of Corruption	[-]	World Bank (WGI)
6.4	Political System		
6.4.1	Voice and Accountability	[-]	World Bank (WGI)
6.4.2	Political Stability and Absence of Violence	[-]	World Bank (WGI)
6.4.3	Government Effectiveness	[-]	World Bank (WGI)

Readymade indices without any unit are indicated with [-].

We collect time series ranging from 2000 to 2009 and usually refer to the last data record. For growth data, for example real GDP growth, we calculate the three-year geometric mean in order to smooth fluctuations and to capture the medium terms trends. For some of the data series we apply the logarithmic transformation to control for skweness of the cross sectional data. In less

than 2% of all cases, data was not available for a certain year. If data-points are missing, we apply in all cases the three methods suggested by Nardo et al. (2005a) in the following order: a) We try to find missing data in other databases or via the Internet, b) we interpolate between the adjacent data records, and c) we use the latest available data.

However, we do not always use raw data but sometimes refer to ready-made indices like the "doing business indices" from the World Bank.[1] For detailed descriptions of the individual index items, we refer the reader to the Appendix to this paper and the original data sources, where comprehensive definitions and descriptions of the data series are provided.

3.2   Composition of the Index

In general, composite indicators are used to summarize a number of underlying individual indicators or variables. They are quantitative or qualitative measures derived from a series of observed facts that can reveal or proxy characteristics and serve as information for specific decisions. In general, we follow the approach proposed by Nicoletti et al. (2000).

We determine a structure of three sub-index levels and group the items according to their socio-economic interpretation. The main advantage of this structure is that we can trace back indicator values to increasing levels of detail. This will help in interpreting the strengths and weaknesses of individual countries and in drawing up the conclusions. We perform reliability analysis, using Cronbach's Alpha on raw-data level to ascertain the consistency of the chosen data and the structure of our model, and we rescale all data according to the linear rescaling method from 100 (best) to 1 (worst).

Using this composition technique for all the calculations in principle, we differentiate two methods to determine the weights for the overall index aggregation. The first method is simple, and we equally weigh the individual data series or constructs when we aggregate them on the superior index level. We refer to this as our base case scenario. In the second approach, we perform factor analysis and discard data series from constructs, where the data does not meet the statistical requirements in order to run proper factor analysis. The decision to include or

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[1] See http://www.doingbusiness.org.

discard data series from the index depends on the Kaiser-Meyer-Olkin Measure of Sampling Adequacy and the results of Bartlett's Test of Sphericity. Both methods are commonly used to proof consistency of the chosen data series and the validity of factor analysis.

All the different weighting schemes are sensitive to the normalization and standardization of the underlying variables. Hence, we perform sensitivity analyses to analze the impact of the different approaches on the results. Furthermore, we compare our index with alternative composite indices found in academic literature or regularly used in practice. All these procedures are described in the subsequent sections.

3.2.1 Analysis of Index Consistency

Before modeling a composite index, it needs to be checked if the underlying structure of the data is appropriate to describe a uni-dimensional construct and if the identified groups of indicators provide a good interpretation of the results. We use Cronbach's (1951) Alpha, which is the most common measure of internal consistency of items in a model or a survey.[2] It assesses how well a set of items measures uni-dimensionality. Cronbach's Alpha is defined as:

$$\alpha = \frac{n\overline{R}}{1 + (n-1)\overline{\overline{R}}}$$
(Eq. 1),

where n is the number of the components of a (sub-) construct and $\overline{R}$ is the mean correlation of the items (e.g. the mean of the non-diagonal terms of the correlation matrix). The coefficient increases with the number of sub-indicators and with the correlation of each tuple. Cronbach's Alpha is equal to zero if no correlation exists if the sub-indicators are independent. The coefficient is equal to one if the sub-indicators are perfectly correlated. Hence, a high alpha indicates that the underlying items proxy well the desired characteristic. Nunnally (1978) suggests a value of 0.7 as an acceptable threshold. In our case, the Cronbach Alphas provide information if the selected data is adequate to express the six key drivers, and if it is appropriate to aggregate the six key drivers to the overall index. Table 3 presents the consistency of the six key drivers measured by their Cronbach Alphas.

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[2] Cf. Raykov (1998), Cortina (1993), Feldt et al. (1987), Green et al. (1977), Hattie (1985), and Miller (1995).

Table 3 Consistency Analysis of the Raw Data on Key Driver and Index Level

	N	Cronbach Alpha
1. Economic Activity	6	.541
2. Real Estate Investment Opportunities	12	.789
3. Depth of Capital Market	15	.904
4. Investor Protection and Legal Framework	9	.869
5. Administrative Burdens and Regulatory Limitations	16	.802
6. Socio-cultural and Political Environment	8	.952
Real Estate Investment Index	66	.965

All results stem from the rescaled raw data, which was grouped according to its socio-economic significance.

The analyses confirms that the composition of the key drivers and of the overall index is statistically robust as signaled by the generally very high Cronbach Alphas. Unfortunately, Cronbach's Alpha for economic activity is below the cut-off value of 0.7. It could be improved to 0.792 by omitting GDP growth from our data sample. This recommendation results from a low correlation of GDP growth with the other data series used to assess the economic activity key driver, as predominantly the emerging countries show high economic growth rates but score low in some of the remaining indicators. However, we decide not to discard economic growth from our list of index items because literature proposes it as a very important real estate investment determinant and should motivate much of the real estate activity especially in emerging countries. The Cronbach Alpha for the entire index is sufficiently high with 0.965 and leads us to continue with our pre-defined index structure. Overall, we propose that the selection of index items altogether is adequate to calculate a country's attractiveness for real estate investors, and proceed using the index structure with the 66 data series as described above.

3.2.2 Normalization Techniques

All variables need to be normalized before they are aggregated into composite indicators. Various techniques exist for the normalization process implying particular advantages and

disadvantages. In the following, we want to briefly discuss the most common normalization methods:[3]

Ranking is the simplest normalization technique and is not affected by outliers. This method allows to follow the changes of ranking positions of countries over time. Nevertheless, due to determining the absolute levels only, information of each underlying item and the distances between countries will be lost.[4] The Ranking method is defined as:[5]

$$I_{qc}^t = Rank(x_{qc}^t) \qquad \text{(Eq. 2)}$$

Standardization (or z-scores) converts the underlying data to a common scale of the standard normal distribution. Hence, data series with extreme values have a greater effect on the summarized indicator. This might be desirable if the intention is to reward exceptional behavior. The z-score formula is defined as:[6]

$$I_{qc}^t = \frac{x_{qc}^t - x_{qc=\bar{c}}^t}{\sigma_{qc=\bar{c}}^t} \qquad \text{(Eq. 3)}$$

The *Re-scaling method* is used to normalize indicators to an identical range due to linear transformation. This method is vulnerable for extreme values or outliers, which can distort the transformation line due to a marginal change of the slope. Re-scaling can widen the range of indicators lying within a small interval, increasing the effect on the composite indicator stronger than z-scores transformation. The method of re-scaling is exemplified as:[7]

$$I_{qc}^t = \frac{x_{qc}^t - \min_c(x_q^{t_0})}{\max_c(x_q^{t_0}) - \min_c(x_q^{t_0})} \qquad \text{(Eq. 4)}$$

The *distance to a reference* measures the relative position of a given indicator to a reference point. The reference point can be an external benchmark country, or any aimed target. This method is defined by the following formula:[8]

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[3] Cf. Freudenberg (2003); Jacobs et al. (2004).
[4] Cf. Nardo et al. (2005a), p. 46.
[5] Note: x_{ic}^t is the value of indicator for country c at time t. $\bar{c}$ is the reference country.
[6] Cf. Nardo et al. (2005a), p. 20.
[7] Cf. Nardo et al. (2005a), p. 20.
[8] Cf. Nardo et al. (2005a), p. 20.

$$I_{qc}^t = \frac{x_{qc}^t}{x_{qc=\bar{c}}^{t_0}} \quad or \quad I_{qc}^t = \frac{x_{qc}^t - x_{qc=\bar{c}}^{t_0}}{x_{qc=\bar{c}}^{t_0}} \qquad \text{(Eq. 5)}$$

Alternatively, the reference country could be the average country of the sample. While other countries would receive scores depending on their distance relatively to the average, the score of one would be given to the benchmark. Hence, an item-score above one indicates above-average performance. Overall, this normalization method is simple and not affected by outliers. However, the arbitrariness of the chosen threshold level and the omission of absolute level information are usually criticized.

In addition, there are *methods for cyclical indicators* for the construction of composite indicators when data exist in the form of time series. This method is recommended for reducing the risk of receiving false signals and to achieve better forecast cycles for economic activities, by the consideration of the results of business tendency surveys in composite indicators.[9] The following formula exemplifies the method for cyclical indicators with the mean over time $E_t(x_{qc}^t)$:[10]

$$I_{qc}^t = \frac{x_{qc}^t - E_t(x_{qc}^t)}{E_t\left|x_{qc}^t - E_t(x_{qc}^t)\right|} \qquad \text{(Eq. 6)}$$

The *percentage of annual differences* over consecutive years measures the percentage growth to the previous year instead of the absolute level. As a consequence, the transformation is only applicable if the underlying data is available for a certain number of years.[11]

$$I_{qc}^t = \frac{x_{qc}^t - x_{qc}^{t-1}}{x_{qc}^t} \qquad \text{(Eq. 7)}$$

Overall, our discussion of the main normalization methods reveals that the selection of a suitable method is not trivial and requires special attention.[12] Normalization methods should consider the properties of the underlying data, as well as the objective of the summarized indicator. Each method bares advantages and disadvantages, and yields a different result. The standardization

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[9] Cf. Nilsson (2000).
[10] Cf. Nardo et al. (2005a), p. 20.
[11] Cf. Nardo et al. (2005a), p. 20.
[12] Cf. Ebert/Welsh (2004).

method and the re-scaling approach are the most commonly used because they have desirable characteristics when it comes to data aggregation in composite indicators.

Considering the data in our sample, several countries score rather close to each other. With the re-scaling method, it is possible to widen the spread of countries' distances. Hence, we prefer the re-scaling method to convert all variables respectively to a common scale from 1 to 100 with the latter representing the best performing country.

3.2.3 Aggregation Techniques

Various aggregation methods might affect the index results. They can be distinguished in additive methods, geometric aggregation and non-compensatory multi-criteria analysis.[13] In this paper, we focus on additive and geometric aggregation methods because they are commonly in use in most recent research. More information about alternative aggregation techniques can be found in Nardo et al. (2005a, b). Before we explain the advantage and disadvantages of each method, an illustration of the mathematical background of the two methods is provided below.

Linear aggregation is one of the additive methods and can be defined as the weighted sum like:

$$CI_c = \sum\nolimits_{q=1}^{Q} w_q I_{qc} \qquad \text{(Eq. 8)}$$

Geometric aggregation is defined as:

$$CI_c = \prod_{q=1}^{Q} x_{q,c}^{w_c} \qquad \text{(Eq. 9)}$$

, with $\sum_q w_q = 1$ and $0 \le w_q \le 1$ for all $q = 1,...,Q$ and $c = 1,...,M$.

While the linear aggregation method is useful when all sub-indicators have the same measurement unit[14], geometric aggregation is better suited, if non-comparable and strictly positive sub-indicators[15] are expressed in different ratio-scales.[16] Linear aggregation rewards

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[13] Cf. Nardo et al. (2005a), pp. 75.

[14] Note: $f : x \rightarrow \alpha x + \beta_i \quad \alpha > 0; \alpha$ is fixed, but β_i varying across sub-indicators; Cf. Nardo et al. (2005a), p. 80.

[15] Note: $f : x \rightarrow \alpha_i x \quad \alpha_i > 0; \alpha_i$ varying across sub-indicators; Cf. Nardo et al. (2005a), p. 80.

base-indicators proportionally to the weights, while geometric aggregation rewards those countries or those sub-indicators with higher scores.[17] Overall, a shortcoming in one dimension can be compensated by a surplus in another, which implies an inconsistency between how weights are conceived and the actual meaning when geometric or linear aggregation is used. Hence, compensability is constant in linear aggregation, while compensability in geometric aggregation is lower for the sub-indicators with low values. If compensability is admitted, due to geometric aggregation a country with low scores on one indicator will need a much higher score on the others to improve its situation. Therefore, countries with low scores prefer a linear rather than a geometric aggregation.[18]

Otherwise, under geometric aggregation the marginal utility from an increase in low absolute scores would be much higher. Accordingly, a country would be more interested in increasing those sectors with the lowest score in order to have a higher chance to improve its position in the ranking. Baring this in mind, this aspect could be aspired by policy makers.[19]

3.2.4 Weighting Technique

Weights can have a significant effect on the overall composite indicator and the country rankings. A number of weighting techniques exist in literature. Nardo et al. (2005a, b) provide an overview on the most common techniques, which can be derived from statistical models, such as factor analysis, data envelopment analysis and unobserved components models (UCM), or from participatory methods like budget allocation processes (BAP), analytic hierarchy processes (AHP) and conjoint analysis (CA). Regardless of which method is used, weights are essentially value judgments. In this paper, we focus on two approaches. First, we apply a neutral approach based on equal weighting. Second, we use factor analysis in order to calculate the weights based on the statistical properties of the underlying data series. We finally compare both methods in sensitivity analysis.

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[16] Cf. Ebert/Welsch (2004).
[17] Cf. Nardo et. al (2005a), p.22.
[18] Cf. Nardo et. al (2005a), pp.22.
[19] Cf. Zimmermann/Zysno (1983).

3.2.4.1 Equal Weighting

If there are no statistical or empirical grounds for choosing a different scheme, one could use equal weights to aggregate the index items. This implies an equal contribution of all sub-indicators to the real estate attractiveness, which is arguable. However, from the large body of literature it is difficult to draw conclusions about the importance, and hence the weight, of the individual criteria.

As first step, we apply for our index equal weights for all data series, when we aggregate them to the level 2 constructs as a neutral weighting scheme. Then again, we use equal weights for the level 2 constructs to aggregate the six key drivers. Finally, the weight of the key drivers depends on the number of level 2 constructs included in each of them. For example, "1 Economic Activity" consists of six level 2 constructs, while "2 Real Estate Market" consists of five. Overall, we use 31 level 2 constructs for the index, and hence, "1 Economic Activity" receives a weight of 6/31, which is 0.194, while the weight of "2 Real Estate Market" is 5/31 – 0.161. Thus, key drivers with more level 2 constructs gain more weight. Table 4 shows the overall weights of each key driver for the equal weighting method set.

Table 4 Weights for the Key Drivers

	N of Groups	Weights
1. Economic Activity	6	0.194
2. Real Estate Investment Opportunities	5	0.161
3. Depth of Capital Market	6	0.194
4. Investor Protection and Legal Framework	4	0.129
5. Administrative Burdens and Regulatory Limitations	6	0.194
6. Socio-cultural and Political Environment	4	0.129
Real Estate Investment Index	31	1.000

Overall, the benefit of this method is that the construction and the allocation of level 2 constructs to each key drivers is fully neutral due to a full equal weighing scheme. Hence, level 2 constructs could be switched to other key drivers without having any impact on the overall result of the index.

3.2.4.2 Factor Analysis

In composite index modeling, multivariate analysis is a common method in order to analyze dependencies within the data and to gain advantage by calculating weights according to the statistical properties of the underlying data series. There are a number of weighting techniques derived from statistical models. Manly (1994) discusses principal component analysis. Nardo et al. (2005a) propose factor analysis, and data development analysis. Kaufmann et al. (1999 and 2003) use an unobserved component model. Other, similar weighting techniques are derived from analytic hierarchy processes, as described in Forman (1983), or Saaty (1987), or from conjoint analysis, as in Green and Srinivasan (1978), Hair et al. (1998), and McDaniel and Gates (1998).

Following the composite index approach of Berlage and Terweduwe (1988), we use factor analysis technique for the level 2 sub-indices and for the key drivers. The level 3 data series are always aggregated to the level 2 constructs using equal weights. In this weighting method, each component is assigned a weight according to its contribution to the total variance in the data. This is an attractive feature, because it ensures that the resulting summary indicators account for a large part of the cross-country variance of the underlying items. That makes this method independent of prior views on their relative economic importance. This is at once an advantage and a disadvantage. The advantage is that the weights are a result of the statistical properties of the underlying data and we do not need to determine weights on our own, which is, in fact, an arbitrary task. The disadvantage is that one might assume that some of the criteria play a dominant role. However, as highlighted in Nicoletti et al. (2000), the properties of factor analyses are particularly desirable for cross-country comparisons. Our sensitivity analysis in a later section of this paper shows the impact of different weighting schemes on the overall result.

A detailed discussion of factor analyses is carried out in, for instance, Hair et al. (1998). The general linear factor model for p observed variables and q factors or latent variables takes the form:

$$x_i = \alpha_{i1}F_1 + \alpha_{i2}F_2 + ... + \alpha_{iq}F_q + e_i \qquad (i = 1,...,p) \qquad \text{(Eq. 10)},$$

where x_i represent standardized variables, and $\alpha_{i1},...,\alpha_{iq}$ are factor loadings related to the factors $F_i,...,F_q$, while e_i are residuals. The factors are uncorrelated with each other, and with the residuals. Further, they have zero means, and unit variance. Additionally, the residuals are uncorrelated with each other. They have zero means, but not necessarily equal variances.

To run factor analyses properly, we have to drop those items, which do not meet the requirements for factor analysis. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (MSA) is based on the partial correlations among the input variables. The measure should be above 0.5 for each individual variable and likewise for the overall set. In factor analyses, variables with MSA values below 0.5 should be omitted from the analysis one at a time. With Bartlett's Test of Sphericity, it can be shown that the correlation matrix is not an identity matrix. The test value should be below the 0.05 significance level.

We apply a pooled data set ranging from 2004-2009 for the factor analysis and drop variables when necessary (e.g. 1.3 GDP Growth, 2.2 Degree of Urbanization, 2.3 Urban Population, and 5.1 Taxation). Table 5 shows the consistency analysis of the underlying items on the level of the six key drivers and their MSA values and Bartlett's Test significance values.

Table 5 Consistency Analysis of the Underlying Items on the Level of the six Key Drivers

	MSA Value	Bartlett's Test	Items dropped
1. Economic Activity	0.731	0.000	1.3 GDP Growth
2. Real Estate Investment Opportunities	0.583	0.000	2.2 Degree of Urbanization 2.3 Urban Population
3. Depth of Capital Market	0.875	0.000	-
4. Investor Protection and Legal Framework	0.733	0.000	-
5. Administrative Burdens and Regulatory Limitations	0.762	0.000	5.1 Taxation
6. Socio-cultural and Political Environment	0.809	0.000	-
Real Estate Investment Index	0.852	0.000	-

Pooled data set from 2004-2009.

Now, the most common method used to extract the first *m* components is principal component analysis. The decision of when to stop extracting factors depends on the point when only little "random" variability remains. Various stopping rules have been developed as described in Dunteman (1989): Kaiser's Criterion, Screen Plot, variance explained criteria, Joliffe Criterion, Comprehensibility, Bootstrapped Eigenvalues and Eigenvectors. Kaiser's Criterion is one of the most widely used stopping rules and recommends dropping all factors with an Eigenvalue below one. Due to Kaiser (1958), most of the total variance is determined by components beyond the Eigenvalue of one.

Resulting from the previous consistency checks and analyses, we obtain one single component that represents 76.191% of the total variance of the underlying data. Consequently, the data sample is fully uni-dimensional, reflecting an ideal measure for a country's attractiveness index (see Table 6).

Table 6 Total Variance explained by Components

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.751	76.191	76.191	4.571	76.191	76.191
2	.760	12.673	88.863			
3	.231	3.848	92.711			
4	.215	3.577	96.288			
5	.120	1.993	98.281			
6	.103	1.719	100.000			

Due to the uni-dimensionality of the data sample, rotation of factors according to Hair et al. (1998) becomes unnecessary. The last step (see Table 7) of the weighting procedure deals with the construction of the weights from the matrix of factor loadings. The square of a factor loading represents the proportion of the variance of the indicator explained by the factors. According to Nardo et al. (2005a), the component weights are calculated as a linear combination of its proportion of explained variance in the dataset. For instance, for Economic Activity the weight becomes 0.187 ($0.187 = 0.926^2/4.571$).

Table 7 Component Matrix and Calculation of the Weights

	Component Loadings 1	Component Weights 1
1. Economic Activity	0.926	0.187
2. Real Estate Investment Opportunities	0.892	0.174
3. Depth of Capital Market	0.768	0.129
4. Investor Protection and Legal Framework	0.896	0.176
5. Administrative Burdens and Regulatory Limitations	0.845	0.156
6. Socio-cultural and Political Environment	0.902	0.178
Explained Variance	4.571	
Explained / Total Variance	1.000	SUM=1.000

Table 7 presents the weights of the six key drivers using factor analysis. Economic Activity achieves the highest weight, followed by Socio-cultural and Political Environment, Investor Protection and Legal Framework, Real Estate Investment Opportunities, Administrative Burdens and Regulatory Limitations, and finally Depth of Capital Market. However, it becomes obvious that the difference between the weights of the six key drivers is not very large, probably leading to similar results if we applied equal weights to aggregate the sub-indexes. This issue will be addressed in the sensitivity analyses, where we compare the different approaches.

The previous three tables present the procedure to determine the weights of the already aggregated key drivers. For the determination of the key driver scores themselves, we had to perform the analogue procedure a step before, using the data and sub-constructs they consist of. We present the results of the factor analyses for the key drivers in Appendix C to this paper. Nardo et al. (2005b) discuss the advantages and disadvantages of factor analysis. Factor analysis can summarize a set of sub-indicators while preserving the maximum possible proportion of the total variation in the original set. This is a very desirable feature for cross-country comparisons. Contrarily, the determined factor loadings might not represent the real influence of sub-indicators. However, the real influences are yet unknown and our index will contribute to solving this problem. Furthermore, factor analysis is highly sensitive towards modification of the sample due to data revisions or inclusion of additional countries.

3.3 Explanatory Power of the Results

3.3.1 Back-test

Previous studies of international real estate investments relied their analyses on real estate market returns, prime yields or on listed real estate securities, such as REITs. We define market attractiveness through six key-drivers influencing real estate investment activity per country as dependent variable. Hence, we can test the quality of our three different index models i) geometric aggregation with equal weighting, ii) linear aggregated with equal weighting, and iii) geometric aggregation with factor analysis by correlating the index results with actual commercial real estate investment activity. Table 8 presents the correlation coefficients over several years and reveals that all of our index versions correlate reasonably with commercial real estate investment activity in the particular countries from 2004-2009. However, we chose alternative i) as our base case scenario because of its higher correlation coefficients.

Table 8 Correlation Analysis with Real Estate Investments

Index t=t		Real Estate Investments					
		2004	2005	2006	2007	2008	2009
Equal Groups	Pearson Correlation	.856**	.859**	.812**	.782**	.768**	.731**
Geom. Agg.	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	33	34	34	43	45	46
Equal Groups	Pearson Correlation	.845**	.843**	.800**	.761**	.733**	.660**
Linear Agg.	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	33	34	34	43	45	46
Factor Analysis	Pearson Correlation	.807**	.809**	.757**	.731**	.698**	.609**
Geom. Agg.	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	33	34	34	43	45	46

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).
The control variable is the natural logarithm of Real Estate Investments in USD mn. (3 years average). The correlation is calculated: index (t) with control variable (t).

3.3.2 Sensitivity Analysis

We furthermore conduct a sensitivity analysis to find out if our results are robust concerning different aggregation and weighting methods. We primarily focus on the weighting scheme, because one of the most arbitrary choices remains setting the weights for the aggregation of the underlying variables when constructing composite indices. Figure 2 shows the shifts of ranking positions for the various construction methods. The larger the amplitude of a country, the bigger is the variance (difference between minimum and maximum ranking position) in the ranking with respect to the change in construction methods. However, we finally obtain an average shift

of 4.24 ranking positions among the 66 countries, which we interpret as a good result. Hence, we claim that our index is robust towards different calculation methods.

Figure 2 Sensitivity Analysis
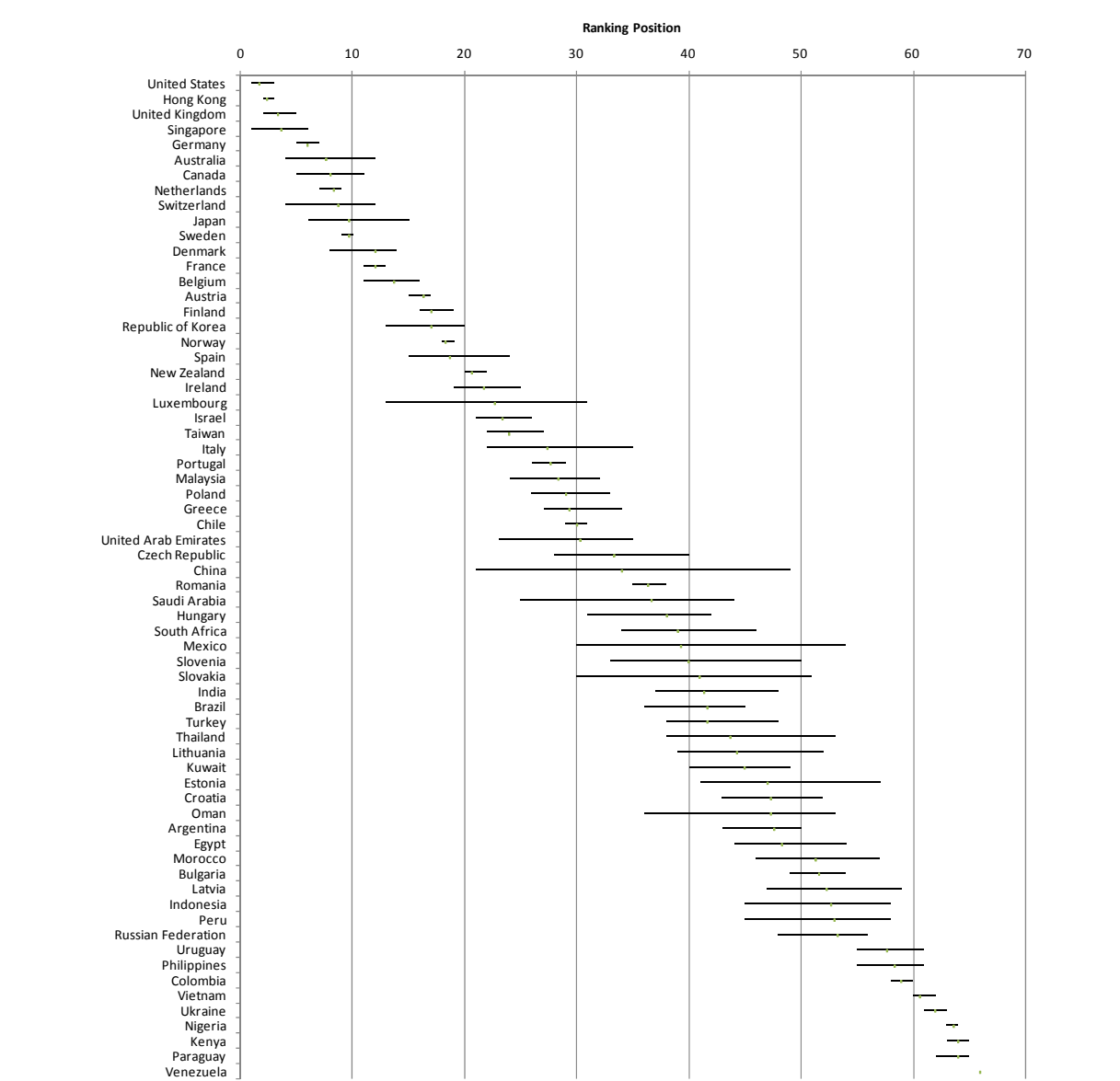
Index 1): Rescaled, equal weights, geometric aggregation; Index 2): Rescaled, equal weights, linear aggregation; Index 3): Rescaled, factor analysis, geometric aggregation.

3.3.3 Comparison with alternative Composite Indices

Chen and Hobbs (2003) develop a Global Real Estate Risk (GRER) index for 44 countries based on three components: country, structural and cyclical real estate risks. The authors argue that these three measures capture the key dimensions of international real estate risk. They apply factor analysis according to the approach presented in our paper. However, they finally weigh the three key drivers manually, depending on the portion of particular risk that should be

captured by the investment strategy, such as "core" and "opportunistic". Unfortunately, due to the propriety nature of the authors' work, they provide little or no information on individual countries and only summarize the results by ranking the countries as either "Opportunistic" or "Core".

Lee (2005) assesses the potential of 51 countries for international investments via developing the Real Estate Potential Index (REP Index) based on the four components: expected growth, country risk, transparency, and market specific risk. Except from the expected growth, where he relies on the expected five years GDP growth, he uses the Euromoney Country Risk (ECR) index, which is based on survey data, and the JLL Global Transparency Index, which is explained below. The component, which captures the real estate market specific risk, is a self-constructed component comprising only few of the composites that we consider in our analysis. He finally aggregates the components via equal weights resulting in a similar ranking for 2005 and hence, a high correlation of 0.875 with our index.

Finally, the property management company Jones Lang LaSalle developed a Global Real Estate Transparency (GRET) Index in 1999. This index is based on a structured survey conducted within LaSalle Investment Managers and covers the following five key attributes of real estate transparency: (1) Legal factors; (2) Regulatory burden; (3) Availability of information on market fundamentals; (4) Listed vehicle financial disclosure and governance; and (5) Availability of investment performance. The data is gathered via questionnaires and aggregated using an equal weighting scheme. The composite scores range between 1 (best level of transparency) and 5 (opacity). The final ranking groups countries into five broad tiers of transparency: Tier 1: Highly Transparent, Tier 2: Transparent, Tier 3: Semi-Transparent, Tier 4: Low Transparency, Tier 5: Opaque. We compare the GRET index ranking with our Global REIA Index and obtain a reasonable correlation of 0.835 for the years 2004-2008.

Even though all indices seem to be similar, we show in Table 9 that our construct is superior in terms of its correlation with actual real estate investment activity.

Table 9 Comparison with Alternative Indices

		Invest-ments	Global REIA Index	GRET Index	Lee Index	Chen & Hobbs Opp. Index	Chen & Hobbs Core Index
Global REIA Index	Spearman's rho Sig. (2-tailed) N	.821** .000 189	1.000 330	.835** .000 183	.875** .000 46	.334 .150 20	.225 .355 19
GRET Index	Spearman's rho Sig. (2-tailed) N	.676** .000 119	.835** .000 183	1.000 183	n/a	n/a	n/a
Lee Index	Spearman's rho Sig. (2-tailed) N	.782** .000 28	.875** .000 46	n/a	1.000 46	n/a	n/a
Chen & Hobbs Opp. Index	Spearman's rho Sig. (2-tailed) N	.235 .363 17	.334 .150 20	n/a	n/a	1.000 20	.370 .144 17
Chen & Hobbs Core Index	Spearman's rho Sig. (2-tailed) N	.014 .960 15	.225 .355 19	n/a	n/a	.370 .144 17	1.000 19

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).
All data are ranked over the entire country sample for comparisons purposes implying the Spearman's rho as used calculation method for monotone data series. The control variable is the natural logarithm of Real Estate Investments in USD mn. (3 years average).
Time series applied for Global REIA Index: 2004-2008, GRET Index: 2006-2008, Lee Index: 2005, Chen & Hobbs: 2004.

4 The Attractiveness of Countries for Real Estate Investors

4.1 Country Ranking according to our Global REIA Index

Based on the aforementioned procedure, we obtain a global country ranking for our base case index as shown in Figure 3. We chose the United States as benchmark country in order to facilitate further analyses and comparison due to the fact, that the US receive the highest index score and that it was ever the most active country for real estate investments. Hence, we rescale all composites by setting United States to 100 points.

Figure 3 Country Score and Ranking to the REIA Index 2009/2010

Index Score

Country	Score
United States (1.)	100,0
United Kingdom (2.)	93,7
Hong Kong (3.)	93,1
Australia (4.)	90,0
Canada (5.)	89,6
Singapore (6.)	89,3
Germany (7.)	89,0
Japan (8.)	86,4
Netherlands (9.)	86,4
Sweden (10.)	84,7
France (11.)	84,7
Switzerland (12.)	83,9
Republic of Korea (13.)	82,1
Denmark (14.)	81,7
Spain (15.)	79,9
Belgium (16.)	78,9
Austria (17.)	76,4
Norway (18.)	74,8
Finland (19.)	74,1
New Zealand (20.)	72,6
Israel (21.)	72,4
Italy (22.)	70,3
Taiwan (23.)	69,9
Malaysia (24.)	67,1
Ireland (25.)	65,9
Poland (26.)	65,9
Greece (27.)	65,3
Portugal (28.)	62,1
Chile (29.)	59,7
Mexico (30.)	58,8
Luxembourg (31.)	58,7
China (32.)	57,7
United Arab Emirates (33.)	57,6
South Africa (34.)	57,5
Romania (35.)	57,3
Brazil (36.)	57,3
India (37.)	57,2
Thailand (38.)	55,9
Turkey (39.)	55,1
Czech Republic (40.)	55,0
Saudi Arabia (41.)	54,9
Hungary (42.)	53,5
Argentina (43.)	50,6
Egypt (44.)	48,7
Indonesia (45.)	48,6
Morocco (46.)	47,9
Croatia (47.)	47,8
Russian Federation (48.)	47,3
Kuwait (49.)	47,3
Slovenia (50.)	46,7
Slovakia (51.)	46,3
Lithuania (52.)	46,2
Oman (53.)	43,9
Bulgaria (54.)	43,3
Philippines (55.)	42,7
Peru (56.)	41,0
Estonia (57.)	40,8
Colombia (58.)	37,0
Latvia (59.)	35,7
Vietnam (60.)	35,4
Uruguay (61.)	35,1
Ukraine (62.)	34,9
Nigeria (63.)	25,2
Kenya (64.)	21,1
Paraguay (65.)	19,7
Venezuela (66.)	13,6

Benchmark: United States = 100 points. Composite index: rescaled, geometric aggregation, equal weighted.

The United States are followed by the United Kingdom and Hong Kong. The countries score high with respect to all key driving forces, but in particular due to their sound real estate market fundamentals, and a transparent institutional framework. Emerging markets like Venezuela, Paraguay and Kenya, which comprise the last three positions of the overall ranking, suffer in terms of their economic performance and their institutional framework, which is characterized by a lack of transparency and by stability issues.

The ranking submits that maturity is a key concept in countries' attractiveness as it takes into account the nature and evolution of the markets, as well as their economic, social and institutional condition. Particularly, aspects of political stability, restrictions and regulation on foreign investors, legal framework, legal regulation, sound financial and economic structure, and the strength and stability of the economy are very sensitive to spur real estate investment activity. For detailed information on the characteristics of the 66 countries, we refer to the Appendix D: Detailed Figures and Tables: Figure A 1.

4.2   Strengths and Weaknesses of Developed, Transition and Emerging Markets

While the Western European countries have a long-established tradition for their real estate markets, the emerging regions have attracted considerable attention only recently. A remaining question is still, why the United States has such a high investment level compared to other countries. Table 10 shows our index results on a regional level of the economic groups defined in Table 1. We contribute to market transparency by highlighting the differences of factors attracting real estate investments. Indeed, an active economy, with sophisticated real estate investment opportunities, deep and liquid capital markets, legal and property rights protection, low burdens of doing business, and finally a stable socio-cultural and political environment spur investments within the North American region.

Table 10 Strengths and Weaknesses of Developed, Transition and Emerging Regions

Country/Region	Rank	1. Economic Activity	2. Real Estate Investment Opportunities	3. Depth of Capital Market	4. Investor Protection and Legal Framework	5. Administrative Burdens & Regulatory Limitations	6. Socio-Cultural & Political Environment
North America	I	98	88	94	101	103	109
Australasia	II	89	57	67	106	105	121
Western Europe	III	85	61	61	87	110	112
Asia	IV	83	66	64	67	89	69
Middle East	V	77	41	41	64	94	74
Eastern Europe	VI	70	45	27	68	99	79
Latin America	VII	67	51	28	47	88	56
Africa	VIII	56	43	31	53	78	36

Benchmark: United States = 100 points.

Even if the Australasian and Western European regions show sound and stable economies, Table 10 points out that the weaknesses of these regions stem from the disparities of urbanization and agglomeration centers providing investors with fewer target markets for investments. Furthermore, the missing size and liquidity of domestic capital markets (compared to the US) seem to hamper the investment activity there. The transition and emerging regions are even stronger affected by this obstacle.

In transition markets like some countries in Asia, the Middle East and Eastern Europe, the lack of certain institutional factors does affect the attractiveness. Even if the burden of doing business does not differ significantly from the developed markets, the lack of legal and property rights protection does affect the attractiveness in those countries. Further, the regions are characterized by a less attractive socio-cultural and political environment for investments, and by a higher level of perceived corruption and political uncertainties. The investment risks with respect to legal protection and socio-political instabilities increase even further in Latin America and Africa.

5 Conclusions and Further Research

Since real estate assets are not publicly traded on centralized exchanges, the physical real estate market is characterized by a relative lack of liquidity, large transaction sizes and costs for non-homogenous and immovable properties. The low transparency of the real estate marketplace results in information asymmetries. When investing internationally, investors face further challenges due to lacking experience with the foreign market structure, and with the

particularities of "how local real estate business is done". Indeed, investing internationally means to venture into the unknown and the lack of information and transparency leads to an increased perception of risk. Our goal is to increase the transparency of international real estate markets by measuring and scoring the important country variables for global real estate allocations.

We assess the attractiveness of worldwide 66 countries and obtain a country ranking via a composite measure. We normalize the data and show that the composition of our index is consistent by testing for uni-dimensionality. We determine different weighting schemes based on equal weights and on factor analysis and achieve rankings, which reasonably correlate with actual real estate investments. Further, sensitivity analyses and the comparison with alternative composite indices provide evidence, that our methodology is appropriate, unique, and robust. We give an overview of the strengths and weaknesses of developed, transition and emerging markets with respect to our defined six key drivers: Economic Activity, Real Estate Investment Opportunities, Depth and Sophistication of Capital Markets, Investor Protection and Legal Framework, Administrative Burdens and Regulatory Limitations, and Socio-cultural and Political Environment. Our index structure allows analyzing the key drivers on a more granulated level and we discuss the disparities between developed, transition and emerging countries. We conclude that there exist numerous institutional differences, which affect the investment decisions of globally acting investors and hence, shape these national real estate markets.

Maturity is a key concept in investors' decision-making as it takes into account the nature and evolution of the markets, as well as their economic, social and institutional conditions. Particularly, aspects of political stability, restrictions and regulation on foreign investors, legal framework, legal regulation, sound financial and economic structure, and the strength and stability of the economy are very sensitive for investors' market perception.

Space limitations prevent us from presenting further detailed analyses. Hence, we provide a small fraction of the potential of the Global REIA Index only. Next steps include the analyses of time varying effects over the particular indicators and attempts to optimize the index structure. However, we leave these issues for further research.

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Appendix A: Description of the Data Sample

#	Name	Unit	Impact	Description	Source
Denominators					
D1	Population	[in millions]		Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship-except for refugees not permanently settled in the country of asylum, which are generally considered part of the population of their country of origin.	IMF, UNFPA State of World Population 2008 for values in 2008, UNFPA State of World Population 2007 for values in 2007
D2	GDP	[USD mn]		GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used.	Euromonitor International from International Monetary Fund (IMF), International Financial Statistics
D3	Land Surface	[sq. km]		Land area is a country's total area, excluding area under inland water bodies, national claims to continental shelf, and exclusive economic zones. In most cases the definition of inland water bodies includes major rivers and lakes.	World Development Indicators Database
Dependent Variables					
Dep1	Commercial Real Estate Investments	[LN USD mn]		Yearly amount of commercial real estate investments	Cushman & Wakefield: Investment Atlas
Dep2	Real Estate Market Returns	[%]		Yearly market returns	Investment Property Database (IPD)
The Global Real Estate Investment Attractiveness Index					
1.	**Economic Activity**				
1.1	Economic Size	[LN USD mn]	+	The Economic Size of a country is measured by its Gross domestic product (GDP) which is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.	Euromonitor International from International Monetary Fund (IMF), International Financial Statistics
1.2	GDP per capita	['000 USD per capita]	+	Find definition above (Economic Size 1.1). "Per Capita" describes the division of each data point by the corresponding size of the country's population (e.g. Finland's GDP in 2004 divided by its size of population in this year).	Euromonitor International from International Monetary Fund (IMF), International Financial Statistics
1.3	Real GDP Growth	[%]	+	3 years historic geometric mean. Gross domestic product is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Real GDP: The number reached by valuing all the productive activity within the country at a specific year's prices. When economic activity of two or more time periods is valued at the same year's prices, the resulting figure allows comparison of purchasing power over time, since the effects of inflation have been removed by maintaining constant prices.	Euromonitor International from International Monetary Fund (IMF), International Financial Statistics and World Economic Outlook/UN/national statistics
1.4	Unemployment Rate	[%]	-	Unemployment rate: the ILO international standard definition of unemployment is based on the following three criteria which should be satisfied simultaneously: "without work", "currently available for work" and "seeking work".	Euromonitor International from International Labour Organization
1.5	Inflation, Average Consumer	[%]	-	The annual average inflation rate indicates the average percentage increase in the price of goods and services comparing every month of the year with corresponding	International Monetary Fund

#	Name	Unit	Impact	Description	Source
	Prices			month last year. Data are averages for the year, not end-of-period data.	
1.6	General Innovativeness Index	[-]	+	The framework groups the eight pillars of innovation into two categories: Inputs and Outputs. The five Input pillars – Institutions and Policies, Human Capacity, Infrastructure, Technological Sophistication and Business Markets and Capital – represent aspects which enhance the capacity of a nation to generate ideas and leverage them for innovative products and services. The three Output pillars – Knowledge, Competitiveness, and Wealth – represent the ultimate benefits of innovation for a nation - more knowledge creation, increased competitiveness and greater wealth generation. Each pillar of the GII model is measured by a number of quantitative and qualitative variables. The averaged scores for the Input and Output pillars together give an overall score - the Global Innovation Index. The values of each variable for the country are scaled on a range of 1 to 7.	INSEAD
2.	**Real Estate Investment Opportunities**				
2.1	Institutional Property Estimation	[LN USD mn]	+	Approach according to Liang and Gordon (2003), which relates the size of a country's real estate market to a country's GDP. RE=45%*GDP*(GDP_capita/20000)^(-3) for GDP < 20000 RE=45%*GDP	Euromonitor International from International Monetary Fund (IMF), International Financial Statistics
2.2	Degree of Urbanisation				
2.2.1	Agglomeration Poles	[number]	+	Number of urban agglomerations with more than 1 million habitants	United Nations (http://www.mongabay.com/igapo/2005_world_city_populations/2005_urban_01.html)
2.2.2	Housing stock	[LN '000]	+	Refers to stock of permanent dwellings. A dwelling is a self-contained unit of accommodation. Self-containment is where all the rooms (in particular the basic facilities i.e. kitchen, bathroom and toilet) are behind a door that only the household can use. A dwelling can therefore contain a single household or a number of households, which share at least one of the basic facilities but do not share living accommodation. A permanent dwelling relates to a building whose structure should satisfy at least one of the following criteria: - the walls are of brick, stone and mortar, concrete, breeze block, or similar material; - the roof is of ceramic tiles, slate, thatch, shingle, or concrete; - the length of the shortest wall is least 15 feet - it has over 60 years of life span.	Euromonitor (GMID), National Statistics
2.3	Urban Population				
2.3.1	Urban Population	[% of Population]	+	Urban population is the population of areas defined as urban in each country and reported to the United Nations.	Euromonitor International
2.3.2	Urban Population Growth	[%]	+	3 years geometric mean	Euromonitor International
2.4	Quality of Infrastructure				
2.4.1	Density of road network	[km per sp km of land]	+	Total length, in kilometres, of motorways, highways/main/national roads, secondary/regional roads and other roads, divided by the area of the country in sq km.	Euromonitor International
2.4.2	Quality of road infrastructure	[-]	+	Roads in your country are (1 = underdeveloped, 7 = extensive and efficient by international standards)	World Economic Forum 2008/2009
2.4.3	Quality of railroad infrastructure	[-]	+	Railroads in your country are (1 = underdeveloped, 7 = extensive and efficient by international standards)	World Economic Forum 2008/2009
2.4.4	Quality of air transport infrastructure	[-]	+	Passenger air transport in your country is (1 = underdeveloped, 7 = extensive and efficient by international standards)	World Economic Forum 2008/2009
2.4.5	Quality of electricity supply	[-]	+	The quality of the electricity supply in your country (lack of interruptions and lack of voltage fluctuations) (1 = is worse than in most other countries, 7 = meets the highest standards in the world)	World Economic Forum 2008/2009
2.4.6	Telecommunication	[per capita]	+	Telephone mainlines are fixed telephone lines connecting a subscriber to the telephone exchange equipment.	World Development Indicators

#	Name	Unit	Impact	Description	Source
2.5	Services Total Output	[% of GDP]	+	Services correspond to ISIC divisions 50-99. They include value added in wholesale and retail trade (including hotels and restaurants), transport, and government, financial, professional, and personal services such as education, health care, and real estate services. Also included are imputed bank service charges, import duties, and any statistical discrepancies noted by national compilers as well as discrepancies arising from rescaling. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources. The industrial origin of value added is determined by the International Standard Industrial Classification (ISIC), revision 3. Data are in current U.S. dollars.	World Development Indicators
3.	**Depth of Capital Market**				
3.1	Size and Liquidity of the Stock Market				
3.1.1	Stock Market Capitalisation	[LN USD mn]	+	Market capitalization is the share price times the number of shares outstanding. Listed domestic companies are the domestically incorporated companies listed on the country's stock exchanges at the end of the year. Listed companies does not include investment companies, mutual funds, or other collective investment vehicles.	Euromonitor International from International Monetary Fund (IMF), International Financial Statistics
3.1.2	Total Trading Volume	[% of GDP]	+	This refers to the total value traded during one period.	World Bank (World Development Indicator)
3.2	IPO Market Activity				
3.2.1	IPO Market Volume	[LN USD mn]	+	Proceeds Amount + Overallotment sold in this Market: This data series shows the proceeds amount of the issue in this market plus the overallotment amount (a.k.a. green shoe) sold in this market; i.e. number of shares in this market plus the overallotment shares sold in this market multiplied by the offer price. A green shoe clause in an underwriting agreement provides that, in the case of excess demand, the issuer will authorize additional shares to be sold through the existing syndicate.	Thomson One Banker
3.2.2	Number of IPOs	[LN '000]	+	Number of initial Public Offers (IPOs) in a country.	Thomson One Banker
3.3	M&A Market Activity				
3.3.1	M&A Market Volume	[LN USD mn]	+	The data comprise M&A Ranking Value incl. Net Debt of Target: According to Thomson: RANKVAL= VALNOLIA+Straight Debt+Short-term Debt+Preferred Equity-Cash; VALNOLIA: Transaction Value Excluding Liabilities Assumed; Transaction Value minus the value of any liabilities agreed to be assumed in the transaction.	Thomson One Banker
3.3.2	Number of Deals	[LN '000]	+	Number of M&A deals in a country.	Thomson One Banker
3.4	Debt & Credit Market				
3.4.1	Domestic Credit provided by Banking Sector	[% of GDP]	+	Domestic credit provided by the banking sector includes all credit to various sectors on a gross basis, with the exception of credit to the central government, which is net. The banking sector includes monetary authorities and deposit money banks, as well as other banking institutions where data are available (including institutions that do not accept transferable deposits but do incur such liabilities as time and savings deposits). Examples of other banking institutions are savings and mortgage loan institutions and building and loan associations.	World Bank (World Development Indicator)
3.4.2	Ease of Access to Loans	[-]	+	This data series measures the perceived simplicity of obtaining a bank loan in a country with only a good business plan and no collateral.	World Economic Forum, Executive Opinion Survey 2007, 2008
3.4.3	Credit Information Index	[-]	+	The index ranges from 0 to 6, with higher values indicating the availability of more credit information, from either a public registry or a private bureau, to facilitate lending decisions. If the registry is not operational or has coverage of less than 0.1% of the adult population, the score on the depth of credit information index is 0.	World bank (Doing Business Database)

#	Name	Unit	Impact	Description	Source
				The depth of credit information index measures rules affecting the scope, accessibility and quality of credit information available through either public or private credit registries. A score of 1 is assigned for each of the following 6 features of the public registry or the private credit bureau (or both).	
3.4.4	Soundness of Banks	[-]	+	This data series measures the perceived "Soundness of Banks" Banks in a country. The index ranges from 1 to 7, with higher values indicating that banks are generally healthy with sound balance sheets and low values indicating that banks are in danger of insolvency and may require a government bailout.	World Economic Forum (Executive Opinion Survey 2007, 2008)
3.4.5	Interest Rate Spread	[%]	-	Interest rate spread is the interest rate charged by banks on loans to prime customers minus the interest rate paid by commercial or similar banks for demand, time, or savings deposits.	World Economic Forum; IMF; Economist Intelligence Unit (June 2008); World Development Indicators 2008
3.4.6	Bank Non-performing Loans to Total Gross Loans	[%]	-	Bank nonperforming loans to total gross loans are the value of non-performing loans divided by the total value of the loan portfolio (including nonperforming loans before the deduction of specific loan-loss provisions). The loan amount recorded as nonperforming should be the gross value of the loan as recorded on the balance sheet, not just the amount that is overdue.	World Bank (World Development Indicator)
3.5	Access to Private Capital				
3.5.1	Foreign Direct Investment, Net Inflows	[LN USD mn]	+	Inflows of FDI in the reporting economy comprise capital provided (either directly or through other related enterprises) by a foreign direct investor to an enterprise resident in the economy (FDI enterprise).	Euromonitor International from UNCTAD
3.5.2	Private Equity Investments	[LN USD mn]	+	Amount of private equity investments in a country per year. The country is defined by fund location. Thomson Reuters uses the term to describe the universe of all venture investing, buyout investing and mezzanine investing.	Thomson One Banker
3.6	REITs Market Volume	[LN USD mn]	+	Specifies the market volume of real estate investment trusts listed in the country. However, investment exposure can differ from the country incorporation.	FTSE EPRA NAREIT Series
4.	**Investor Protection and Legal Framework**				
4.1	Investor Protection				
4.1.1	Disclosure Index	[-]	+	The index ranges from 0 to 10, with higher values indicating greater disclosure.	World bank (Doing Business Database)
4.1.2	Director Liability Index	[-]	+	The index ranges from 0 to 10, with higher values indicating greater liability of directors.	World bank (Doing Business Database)
4.1.3	Shareholder Suits Index	[-]	+	The index ranges from 0 to 10, with higher values indicating greater powers of shareholders to challenge the transaction.	World bank (Doing Business Database)
4.2	Security of Property Rights				
4.2.1	Legal Rights Index	[-]	+	The index ranges from 0 to 10, with higher scores indicating that collateral and bankruptcy laws are better designed to expand access to credit. The legal rights index measures the degree to which collateral and bankruptcy laws protect the rights of borrowers and lenders and thus facilitate lending.	World bank (Doing Business Database)
4.2.2	Property Rights	[-]	+	"Property rights" is an assessment of the ability of individual to accumulate private property, secured by clear laws that are fully enforced by the state.	Heritage Foundation
4.3	Quality of Legal Enforcement				
4.3.1	Judicial Independence	[-]	+	This data series measures the perceived "Judicial Independence" in a country. The index ranges from 0 to 7, with higher values indicating that the judiciary in a country is independent from political influences of members of government, citizens, or firms and lower values indicating that it is heavily influenced.	Fraser Institute World Economic Forum (Global Competitiveness Report)
4.3.2	Integrity of the Legal System	[-]	+	This component is based on two sub-components. Each sub-component equals half of the total. The 'law' sub-component assesses the strength and impartiality of the legal	Fraser Institute, PRS Group (International

#	Name	Unit	Impact	Description	Source
				system, and the 'order' sub-component assesses popular observance of the law. The index ranges from 0 to 10. High rating values indicate a sound legal system.	Country Risk Guide)
4.3.3	Rule of Law	[-]	+	"Rule of Law" measures the extent to which agents have confidence in and abide by the rules of society, in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence. The index ranges from 0 to 100.	World Bank (Worldwide Governance Indicator)
4.4	Regulatory Quality	[-]		"Regulatory Quality" measures the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. The index ranges from 0 to 100.	World Bank (Worldwide Governance Indicator)
5.	**Administrative Burdens and Regulatory Limitations**				
5.1	Taxation				
5.1.1	Marginal Corporate Tax Rate	[%]	-	Highest marginal tax rate (corporate rate) is the highest rate shown on the schedule of tax rates applied to the taxable income of corporations. PricewaterhouseCoopers, Corporate Taxes: Worldwide Summaries, by permission of John Wiley and Sons, Inc.	World Development Indicators
5.1.2	Profit and Capital Gains Tax	[%]	-	Taxes on income, profits, and capital gains are levied on the actual or presumptive net income of individuals, on the profits of corporations and enterprises, and on capital gains, whether realized or not, on land, securities, and other assets. Intergovernmental payments are eliminated in consolidation.	World Development Indicators
5.2	Burden Getting a Construction Permit	[-]		This topic tracks the procedures, time, and costs to build a warehouse, including obtaining necessary licenses and permits, completing required notifications and inspections, and obtaining utility connections. i) all procedures to build a warehouse, ii) average time spent during each procedure, iii) official cost of each procedure.	World bank (Doing Business Database)
5.2.1	Costs	[% of income per capita]	-	A procedure is any interaction of the company's employees or managers with external parties, including government agencies, notaries, the land registry, the cadastre, utility com-panies, public and private inspectors and technical experts apart from in-house architects and engineers. Interactions between company employees, such as development of the warehouse plans and inspections conducted by employees, are not counted as procedures. Procedures that the company undergoes to connect to electricity, water, sewerage and phone services are included. All procedures that are legally or in practice required for building a warehouse are counted, even if they may be avoided in exceptional cases.	World bank (Doing Business Database)
5.2.2	Number of Procedures	[number]	-	Cost is recorded as a percentage of the country's income per capita. Only official costs are recorded. All the fees associated with completing the procedures to legally build a warehouse are recorded, including those associated with obtaining land use approvals and preconstruction design clearances; receiving inspections before, during and after construction; getting utility connections; and registering the warehouse property. Nonrecurring taxes required for the completion of the warehouse project also are recorded. The building code, information from local experts and specific regulations and fee schedules are used as sources for costs. If several local partners provide different estimates, the median reported value is used.	World bank (Doing Business Database)
5.2.3	Duration	[days]	-	Time is recorded in calendar days. The measure captures the median duration that local experts indicate is necessary to complete a procedure in practice. It is assumed that the minimum time required for each procedure is 1 day. If a pro-cedure can be accelerated legally for an additional cost, the fastest procedure is chosen. It is assumed that construction company does not waste time and commits to completing each remaining procedure without delay. The time that construction company spends on gathering information is ignored. It is assumed that the construction company is aware of all building requirements and their sequence from the beginning.	World bank (Doing Business Database)
5.3	Ease of Registering Property			This topic examines the steps, time, and cost involved in registering property, assuming a standardized case of an entrepreneur who wants to purchase land and a building that is already registered and free of title dispute. The main indicators include: i) number of procedures	World bank (Doing Business Database)

#	Name	Unit	Impact	Description	Source
				legally required to register property, ii) time spent in completing the procedures, and iii) the costs, such as fees, transfer taxes, stamp duties, and any other payment to the property registry, notaries, public agencies or lawyers. The cost is expressed as a percentage of the property value, assuming a property value of 50 times income per capita.	
5.3.1	Costs (incl. Transfer Taxes)	[% of property value]	-	Cost is recorded as a percentage of the property value, assumed to be equivalent to 50 times income per capita. Only official costs required by law are recorded, including fees, transfer taxes, stamp duties and any other payment to the property registry, notaries, public agencies or lawyers. Other taxes, such as capital gains tax or value added tax, are excluded from the cost measure. Both costs borne by the buyer and those borne by the seller are included. If cost estimates differ among sources, the median reported value is used.	World bank (Doing Business Database)
5.3.2	Number of Procedures	[number]	-	A procedure is defined as any interaction of the buyer or the seller, their agents (if an agent is legally or in practice required) or the property with external parties, including government agencies, inspectors, notaries and lawyers. Interactions between company officers and employees are not considered. All procedures that are legally or in practice required for registering property are recorded, even if they may be avoided in exceptional cases. It is assumed that the buyer follows the fastest legal option available and used by the majority of property owners. Although the buyer may use lawyers or other professionals where necessary in the registration process, it is assumed that it does not employ an outside facilitator in the registration process unless legally or in practice required to do so.	World bank (Doing Business Database)
5.3.3	Duration	[days]	-	Time is recorded in calendar days. The measure captures the median duration that property lawyers, notaries or registry officials indicate is necessary to complete a procedure. It is assumed that the minimum time required for each procedure is 1 day. Although procedures may take place simultaneously, they cannot start on the same day. It is assumed that the buyer does not waste time and commits to completing each remaining procedure without delay. If a procedure can be accelerated for an additional cost, the fastest legal procedure available and used by the majority of property owners is chosen. If procedures can be undertaken simultaneously, it is assumed that they are. It is assumed that the parties involved are aware of all regulations and their sequence from the beginning. Time spent on gathering information is not considered.	World bank (Doing Business Database)
5.4	Ease of Starting a Business				
5.4.1	Number of Procedures to start a Business	[#]	-	This data series provides the average number of administrative procedures necessary to start a business in a country. A procedure is defined as any interaction of the company founder with external parties (for example, government agencies, lawyers, auditors or notaries). Interactions between company founders or company officers and employees are not counted as procedures. Only procedures required of all businesses are covered. Industry-specific procedures are excluded. For example, procedures to comply with environmental regulations are included only when they apply to all businesses conducting general commercial or industrial activities. Procedures that the company undergoes to connect to electricity, water, gas and waste disposal services are not included.	World Bank (Doing Business)
5.4.2	Time needed to start a Business	[Days]	-	This data series provides the average number of days necessary to start a business in a country. Time is recorded in calendar days. The measure captures the median duration that incorporation lawyers indicate is necessary to complete a procedure with minimum follow-up with government agencies and no extra payments. It is assumed that the minimum time required for each procedure is 1 day.	World Bank (Doing Business)
5.4.3	Cost of Business Start-Up	[% of Income per	-	This data series provides the average amount of money necessary to start a business in a country. Cost is recorded as a percentage of the country's income per	World Bank (Doing Business)

#	Name	Unit	Impact	Description	Source
	Procedures	Capita]		capita. It includes all official fees and fees for legal or profes-sional services if such services are required by law. Fees for purchasing and legalizing company books are included if these transactions are required by law. The cost excludes bribes.	
5.4.4	Min. Capital	[% of Income per Capita]	-	The paid-in minimum capital requirement reflects the amount that the entrepreneur needs to deposit in a bank or with a notary before registration and up to 3 months following in-corporation and is recorded as a percentage of the country's income per capita. The amount is typically specified in the commercial code or the company law. Many countries have a minimum capital requirement but allow businesses to pay only a part of it before registration, with the rest to be paid after the first year of operation.	World Bank (Doing Business)
5.5	Ease of Closing a Business				
5.5.1	Time	[Years]	-	This data series provides the average number of years necessary to close a business in a country. Time is recorded in calendar years. Information is collected on the sequence of procedures and on whether any procedures can be carried out simultaneously. Potential delay tactics by the parties, such as the filing of dilatory appeals or requests for extension, are taken into consideration.	World Bank (Doing Business)
5.5.2	Cost	[% of Estate]	-	This data series provides the average costs of closing a business in a country. The cost of the proceedings is recorded as a percentage of the estate's value. The cost is calculated on the basis of survey responses by insolvency practitioners and includes court fees as well as fees of insolvency practitioners, independent assessors, lawyers and accountants. Respondents provide cost estimates from among the following options: less than 2%, 2–5%, 5–8%, 8–11%, 11–18%, 18–25%, 25–33%, 33–50%, 50–75% and more than 75% of the value of the business estate.	World Bank (Doing Business)
5.5.3	Recovery Rate [Cents on US$]	[Cents on US$]	+	The recovery rate is recorded as cents on the dollar recouped by creditors through the bankruptcy or insolvency proceedings. The calculation takes into account whether the business emerges from the proceedings as a going concern as well as costs and the loss in value due to the time spent closing down. If the business keeps operating, no value is lost on the initial claim, set at 100 cents on the dollar. If it does not, the initial 100 cents on the dollar are reduced to 70 cents on the dollar. Then the official costs of the insolvency procedure are deducted (1 cent for each percentage of the initial value). Finally, the value lost as a result of the time the money remains tied up in insolvency proceedings is taken into account, including the loss of value due to depreciation of the hotel furniture. Consistent with international accounting practice, the depreciation rate for furniture is taken to be 20%. The furniture is assumed to account for a quarter of the total value of assets. The recovery rate is the present value of the remaining proceeds, based on end-2006 lending rates from the International Monetary Fund's International Financial Statistics, supplemented with data from central banks.	World Bank (Doing Business)
5.6	Foreign Exchange Controls	[-]	+	The Index evaluates a variety of restrictions typically imposed on investment. Points, as indicated below, are deducted from the ideal score of 100 for each of the restrictions found in a country's investment regime. It is not necessary for a government to impose all of the listed restrictions at the maximum level to effectively eliminate investment freedom. Those few governments that impose so many restrictions that they total more than 100 points in deductions have had their scores set at zero. Investment restrictions: i) National treatment of foreign investment ii) Foreign investment iii) Restrictions on land ownership iv) Sectoral investment restrictions v) Expropriation of investments without fair compensation vi) Foreign exchange controls	Heritage Foundation (Index of Economic Freedom)

#	Name	Unit	Impact	Description	Source
				vii)　　　Capital controls and repatriation of profits	
6.	**Socio-cultural and Political Environment**				
6.1	Human Development	[-]	+	The Human Development Index (HDI) is an index used to rank countries by level of "human development". The HDI provides a composite measure of three dimensions of human development (best =1/ worst=0): living a long and healthy life (measured by life expectancy), being educated (measured by adult literacy and gross enrolment in education) and having a decent standard of living (measured by purchasing power parity, PPP, income). It is used to distinguish whether the country is a developed, a developing or an under-developed country, and also to measure the impact of economic policies on quality of life. The index was developed in 1990 by Pakistani economist Mahbub ul Haq and Indian economist Amartya Sen.	Human Development Index: Euromonitor from trade sources/national statistics
6.2	Crime				
6.2.1	Business Costs of Crime and Violence	[-]	+	This data series measures the costs on businesses imposed by the incidence of common crime and violence in a country. The index ranges from 1 to7. High values are assigned to countries where crime does not impose significant costs on businesses.	World Economic Forum, Executive Opinion Survey 2007, 2008
6.2.2	Costs of Organized Crime	[-]	+	This data series measures the perceived "Cost of Organized Crime" in a country. The index ranges from 1 to 7 with higher values indicating that organized crime (mafia-oriented racketeering, extortion) in a country does not impose significant costs on businesses. Lower values indicate that organized crime imposes significant costs on businesses.	World Economic Forum, Executive Opinion Survey 2007, 2008
6.3	Bribing & Corruption				
6.3.1	Bribing & Corruption Index	[-]	+	This index describes the overall extent of corruption (frequency and/or size of bribes) in the public and political sectors. The index ranges from 0 to 10. Countries where bribing and corruption cases are frequent receive a low rating score.	Transparency International
6.3.2	Control of Corruption	[-]	+	This data series measures the perception of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Countries in which seemingly public power is frequently used for private gain a low rating score.	World Bank (Worldwide Governance Indicator)
6.4	Political System				
6.4.1	Voice and Accountability	[-]	+	The extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	World Bank (Worldwide Governance Indicator)
6.4.2	Political Stability and Absence of Violence	[-]	+	The likelihood that the government will be destabilized by unconstitutional or violent means, including terrorism.	World Bank (Worldwide Governance Indicator)
6.4.3	Government Effectiveness	[-]	+	The quality of public services, the capacity of the civil service and its independence from political pressures; and the quality of policy formulation.	World Bank (Worldwide Governance Indicator)

Appendix B: Correlation Matrix

Correlations

		1 Economic Activity	2 Real Estate Investment Opportunities	3 Depth of Capital Market	4 Investor Protection and Legal Framework	5 Administrative Burdens & Regulatory Limitations	6 Socio-Cultural & Political Environment
1 Economic Activity	Pearson Correlation	1	,642**	,626**	,621**	,465**	,632**
	Sig. (2-tailed)		,000	,000	,000	,000	,000
	N	396	396	396	396	396	396
2 Real Estate Investment Opportunities	Pearson Correlation	,642**	1	,808**	,396**	,285**	,356**
	Sig. (2-tailed)	,000		,000	,000	,000	,000
	N	396	396	396	396	396	396
3 Depth of Capital Market	Pearson Correlation	,626**	,808**	1	,564**	,373**	,511**
	Sig. (2-tailed)	,000	,000		,000	,000	,000
	N	396	396	396	396	396	396
4 Investor Protection and Legal Framework	Pearson Correlation	,621**	,396**	,564**	1	,730**	,825**
	Sig. (2-tailed)	,000	,000	,000		,000	,000
	N	396	396	396	396	396	396
5 Administrative Burdens & Regulatory Limitations	Pearson Correlation	,465**	,285**	,373**	,730**	1	,768**
	Sig. (2-tailed)	,000	,000	,000	,000		,000
	N	396	396	396	396	396	396
6 Socio-Cultural & Political Environment	Pearson Correlation	,632**	,356**	,511**	,825**	,768**	1
	Sig. (2-tailed)	,000	,000	,000	,000	,000	
	N	396	396	396	396	396	396

**. Correlation is significant at the 0.01 level (2-tailed).

Pooled correlation for the six key drivers (equal weighted index) form 2004-2009.

Appendix C: Factor Analysis

Table A 1 Factor Analysis – Economic Activity

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,721
Bartlett's Test of Sphericity	Approx. Chi-Square	879,522
	df	15
	Sig.	,000

Anti-image Matrices

		1.1 Total Economic Size (LN GDP)	1.2 GDP per Capita	1.3 Real GDP Growth (3 yrs Avg)	1.4 Working Force	1.5 Inflation	1.6 Technological Development & Innovation
Anti-image Covariance	1.1 Total Economic Size (LN GDP)	,620	,091	,121	-,107	,061	-,224
	1.2 GDP per Capita	,091	,387	,177	-,156	-,054	-,182
	1.3 Real GDP Growth (3 yrs Avg)	,121	,177	,622	-,204	,131	-,015
	1.4 Working Force	-,107	-,156	-,204	,777	-,079	,002
	1.5 Inflation	,061	-,054	,131	-,079	,589	-,138
	1.6 Technological Development & Innovation	-,224	-,182	-,015	,002	-,138	,330
Anti-image Correlation	1.1 Total Economic Size (LN GDP)	,665[a]	,185	,195	-,154	,101	-,495
	1.2 GDP per Capita	,185	,718[a]	,360	-,285	-,114	-,510
	1.3 Real GDP Growth (3 yrs Avg)	,195	,360	,715[a]	-,293	,216	-,033
	1.4 Working Force	-,154	-,285	-,293	,634[a]	-,117	,005
	1.5 Inflation	,101	-,114	,216	-,117	,844[a]	-,313
	1.6 Technological Development & Innovation	-,495	-,510	-,033	,005	-,313	,709[a]

a. Measures of Sampling Adequacy(MSA)

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1.1 Total Economic Size (LN GDP)	298,5183	3198,274	,410	,435
1.2 GDP per Capita	284,0368	2544,779	,540	,335
1.3 Real GDP Growth (3 yrs Avg)	306,0056	5639,001	-,496	,792
1.4 Working Force	259,6087	3602,437	,430	,456
1.5 Inflation	265,3714	3099,040	,479	,402
1.6 Technological Development & Innovation	301,1363	2527,783	,722	,245

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,731
Bartlett's Test of Sphericity	Approx. Chi-Square	693,757
	df	10
	Sig.	,000

Anti-image Matrices

		1.1 Total Economic Size (LN GDP)	1.2 GDP per Capita	1.4 Working Force	1.5 Inflation	1.6 Technological Development & Innovation
Anti-image Covariance	1.1 Total Economic Size (LN GDP)	,644	,067	-,077	,039	-,230
	1.2 GDP per Capita	,067	,445	-,124	-,110	-,205
	1.4 Working Force	-,077	-,124	,850	-,042	-,003
	1.5 Inflation	,039	-,110	-,042	,617	-,142
	1.6 Technological Development & Innovation	-,230	-,205	-,003	-,142	,330
Anti-image Correlation	1.1 Total Economic Size (LN GDP)	,679[a]	,126	-,104	,061	-,498
	1.2 GDP per Capita	,126	,732[a]	-,201	-,210	-,535
	1.4 Working Force	-,104	-,201	,867[a]	-,058	-,005
	1.5 Inflation	,061	-,210	-,058	,841[a]	-,313
	1.6 Technological Development & Innovation	-,498	-,535	-,005	-,313	,670[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
1.1 Total Economic Size (LN GDP)	1,000	,424
1.2 GDP per Capita	1,000	,692
1.4 Working Force	1,000	,283
1.5 Inflation	1,000	,553
1.6 Technological Development & Innovation	1,000	,802

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,754	55,074	55,074	2,754	55,074	55,074
2	,811	16,230	71,304			
3	,760	15,200	86,503			
4	,453	9,055	95,558			
5	,222	4,442	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
1.1 Total Economic Size (LN GDP)	,651
1.2 GDP per Capita	,832
1.4 Working Force	,532
1.5 Inflation	,744
1.6 Technological Development & Innovation	,896

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table A 2 Calculation of the Weights from Factor Analysis – Economic Activity

1 Economic Activity

Component Matrix

	Component loadings 1	Component weights 1	Overall Weights
1.1 Total Economic Size (LN GDP)	0,651	0,154	0,154
1.2 GDP per Capita	0,832	0,251	0,251
1.4 Working Force	0,532	0,103	0,103
1.5 Inflation	0,744	0,201	0,201
1.6 Technological Development & Innovation	0,896	0,291	0,291
Extraction Method: Principal Component Analysis.			
Expl. Var	2,755	1,000	1,000
Expl. /Tot	1,000	Sum	Sum

Table A 3 Factor Analysis – Real Estate Investment Opportunities

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,395
Bartlett's Test of Sphericity	Approx. Chi-Square	613,709
	df	10
	Sig.	,000

Anti-image Matrices

		2.1 Size of Real Estate Market	2.2 Degree of Urbanisation	2.3 Urban Population	2.4 Qualitiy of Infrastructure	2.5 Services Total Output per GDP
Anti-image Covariance	2.1 Institutional Property Estimation	,333	-,287	-,210	-,234	-,048
	2.2 Degree of Urbanisation	-,287	,517	,187	,216	,044
	2.3 Urban Population	-,210	,187	,740	,100	,220
	2.4 Qualitiy of Infrastructure	-,234	,216	,100	,421	-,187
	2.5 Services Total Output per GDP	-,048	,044	,220	-,187	,628
Anti-image Correlation	2.1 Institutional Property Estimation	,390[a]	-,693	-,422	-,624	-,105
	2.2 Degree of Urbanisation	-,693	,253[a]	,303	,464	,078
	2.3 Urban Population	-,422	,303	,254[a]	,179	,322
	2.4 Qualitiy of Infrastructure	-,624	,464	,179	,438[a]	-,363
	2.5 Services Total Output per GDP	-,105	,078	,322	-,363	,646[a]

a. Measures of Sampling Adequacy(MSA)

Item-Total Statistics (1)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
2.1 Institutional Property Estimation	152,5489	1479,828	,739	,118
2.2 Degree of Urbanisation	184,7700	2521,453	,153	,538
2.3 Urban Population	155,0838	2786,318	-,049	,643
2.4 Qualitiy of Infrastructure	156,0060	1727,399	,452	,346
2.5 Services Total Output per GDP	150,0970	2209,067	,245	,497

Item-Total Statistics (2)

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
2.1 Institutional Property Estimation	108,0062	1422,283	,653	,392
2.2 Degree of Urbanisation	140,2273	2308,166	,163	,717
2.4 Qualitiy of Infrastructure	111,4634	1472,690	,517	,501
2.5 Services Total Output per GDP	105,5544	1811,176	,389	,599

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,583
Bartlett's Test of Sphericity	Approx. Chi-Square	274,947
	df	3
	Sig.	,000

Anti-image Matrices

		2.1 Size of Real Estate Market	2.4 Qualitiy of Infrastructure	2.5 Services Total Output per GDP
Anti-image Covariance	2.1 Institutional Property Estimation	,708	-,299	,020
	2.4 Qualitiy of Infrastructure	-,299	,538	-,302
	2.5 Services Total Output per GDP	,020	-,302	,701
Anti-image Correlation	2.1 Institutional Property Estimation	,610[a]	-,484	,028
	2.4 Qualitiy of Infrastructure	-,484	,553[a]	-,491
	2.5 Services Total Output per GDP	,028	-,491	,607[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
2.1 Institutional Property Estimation	1,000	,560
2.4 Qualitiy of Infrastructure	1,000	,790
2.5 Services Total Output per GDP	1,000	,567

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1,917	63,914	63,914	1,917	63,914	63,914
2	,725	24,175	88,088			
3	,357	11,912	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix^a

	Component
	1
2.1 Institutional Property Estimation	,749
2.4 Qualitiy of Infrastructure	,889
2.5 Services Total Output per GDP	,753

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table A 4 Calculation of the Weights from Factor Analysis –Real Estate Investment Opportunities

2 Real Estate Investment Opportunities

Rotated Component Matrix

	Component loadings 1	Component weights 1	Overall Weights
2.1 Institutional Property Estimation	0.749	0.292	0.292
2.4 Qualitiy of Infrastructure	0.889	0.412	0.412
2.5 Services Total Output per GDP	0.753	0.296	0.296
Extraction Method: Principal Component Analysis.			
Expl. Var	1.918	1.000	1.000
Expl. /Tot	1.000	Sum	Sum

Table A 5 Factor Analysis – Depth of Capital Market

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,875
Bartlett's Test of Sphericity	Approx. Chi-Square	1500,240
	df	15
	Sig.	,000

Anti-image Matrices

		3.1 Size and Liquidity of the Stock Market	3.2 IPO Market Activity	3.3 M&A Market Activity	3.4 Access to Debt & Credit Market	3.5 Access to Private Capital	3.6 REIT Market Capitalisation
Anti-image Covariance	3.1 Size and Liquidity of the Stock Market	,364	-,108	-,022	-,176	-,088	-,027
	3.2 IPO Market Activity	-,108	,321	-,141	,083	-,071	-,029
	3.3 M&A Market Activity	-,022	-,141	,287	-,047	-,047	-,126
	3.4 Access to Debt & Credit Market	-,176	,083	-,047	,585	-,050	-,074
	3.5 Access to Private Capital	-,088	-,071	-,047	-,050	,438	-,072
	3.6 REIT Market Capitalisation	-,027	-,029	-,126	-,074	-,072	,413
Anti-image Correlation	3.1 Size and Liquidity of the Stock Market	,873[a]	-,316	-,068	-,381	-,220	-,071
	3.2 IPO Market Activity	-,316	,840[a]	-,463	,192	-,188	-,079
	3.3 M&A Market Activity	-,068	-,463	,855[a]	-,115	-,133	-,365
	3.4 Access to Debt & Credit Market	-,381	,192	-,115	,844[a]	-,099	-,151
	3.5 Access to Private Capital	-,220	-,188	-,133	-,099	,933[a]	-,168
	3.6 REIT Market Capitalisation	-,071	-,079	-,365	-,151	-,168	,909[a]

a. Measures of Sampling Adequacy(MSA)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,081	68,015	68,015	4,081	68,015	68,015
2	,677	11,289	79,304			
3	,413	6,885	86,188			
4	,362	6,037	92,226			
5	,274	4,569	96,794			
6	,192	3,206	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix^a

	Component
	1
3.1 Size and Liquidity of the Stock Market	,856
3.2 IPO Market Activity	,849
3.3 M&A Market Activity	,884
3.4 Access to Debt & Credit Market	,681
3.5 Access to Private Capital	,830
3.6 REIT Market Capitalisation	,833

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table A 6 Calculation of the Weights from Factor Analysis – Depth of Capital Market

3 Depth of Capital Market

Component Matrix

	Component loadings	Component weights	Overall
	1	1	Weights
3.1 Size and Liquidity of the Stock Market	0,856	0,180	0,180
3.2 IPO Market Activity	0,849	0,177	0,177
3.3 M&A Market Activity	0,884	0,191	0,191
3.4 Access to Debt & Credit Market	0,681	0,114	0,114
3.5 Access to Private Capital	0,830	0,169	0,169
3.6 REIT Market Capitalisation	0,833	0,170	0,170
Extraction Method: Principal Component Analysis.			
Expl. Var	4,082	1,000	1,000
Expl. /Tot	1,000	Sum	Sum

Table A 7 Factor Analysis – Investor Protection and Legal Framework

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,733
Bartlett's Test of Sphericity	Approx. Chi-Square	1042,434
	df	6
	Sig.	,000

Anti-image Matrices

		4.1 Investor Protection	4.2 Security of Property Rights	4.3 Quality of Legal Enforcement	4.4 Regulatory Quality
Anti-image Covariance	4.1 Investor Protection	,702	-,189	,042	-,040
	4.2 Security of Property Rights	-,189	,377	-,034	-,093
	4.3 Quality of Legal Enforcement	,042	-,034	,226	-,155
	4.4 Regulatory Quality	-,040	-,093	-,155	,186
Anti-image Correlation	4.1 Investor Protection	,789[a]	-,368	,105	-,112
	4.2 Security of Property Rights	-,368	,829[a]	-,118	-,350
	4.3 Quality of Legal Enforcement	,105	-,118	,694[a]	-,759
	4.4 Regulatory Quality	-,112	-,350	-,759	,681[a]

a. Measures of Sampling Adequacy(MSA)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,853	71,313	71,313	2,853	71,313	71,313
2	,743	18,569	89,882			
3	,290	7,257	97,138			
4	,114	2,862	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
4.1 Investor Protection	,640
4.2 Security of Property Rights	,889
4.3 Quality of Legal Enforcement	,889
4.4 Regulatory Quality	,929

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table A 8 Calculation of the Weights from Factor Analysis – Investor Protection and Legal Framework

4 Investor Protection and Legal Framework

Component Matrix

	Component loadings 1	Component weights 1	Overall Weights
4.1 Investor Protection	0,640	0,144	0,144
4.2 Security of Property Rights	0,889	0,277	0,277
4.3 Quality of Legal Enforcement	0,889	0,277	0,277
4.4 Regulatory Quality	0,929	0,302	0,302
Extraction Method: Principal Component Analysis.			
Expl. Var	2,853	1,000	1,000
Expl. /Tot	1,000	Sum	Sum

Table A 9 Factor Analysis – Administrative Burdens and Regulatory Limitations

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,723
Bartlett's Test of Sphericity	Approx. Chi-Square	615,027
	df	15
	Sig.	,000

Anti-image Matrices

		5.1 Taxation	5.2 Ease of Getting a Construction Permit	5.3 Ease of Registering Property	5.4 Ease of Starting a Business	5.5 Ease of Closing a Business	5.6 Foreign Exchange Controls
Anti-image Covariance	5.1 Taxation	,917	,170	-,075	,007	,105	-,133
	5.2 Ease of Getting a Construction Permit	,170	,677	-,192	,028	-,054	-,184
	5.3 Ease of Registering Property	-,075	-,192	,850	-,147	-,005	,042
	5.4 Ease of Starting a Business	,007	,028	-,147	,572	-,166	-,160
	5.5 Ease of Closing a Business	,105	-,054	-,005	-,166	,505	-,201
	5.6 Foreign Exchange Controls	-,133	-,184	,042	-,160	-,201	,456
Anti-image Correlation	5.1 Taxation	,274[a]	,215	-,085	,010	,154	-,205
	5.2 Ease of Getting a Construction Permit	,215	,729[a]	-,253	,045	-,093	-,330
	5.3 Ease of Registering Property	-,085	-,253	,691[a]	-,211	-,007	,067
	5.4 Ease of Starting a Business	,010	,045	-,211	,780[a]	-,308	-,313
	5.5 Ease of Closing a Business	,154	-,093	-,007	-,308	,760[a]	-,418
	5.6 Foreign Exchange Controls	-,205	-,330	,067	-,313	-,418	,703[a]

a. Measures of Sampling Adequacy(MSA)

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,762
Bartlett's Test of Sphericity	Approx. Chi-Square	581,724
	df	10
	Sig.	,000

Anti-image Matrices

		5.2 Ease of Getting a Construction Permit	5.3 Ease of Registering Property	5.4 Ease of Starting a Business	5.5 Ease of Closing a Business	5.6 Foreign Exchange Controls
Anti-image Covariance	5.2 Ease of Getting a Construction Permit	,710	-,188	,028	-,079	-,174
	5.3 Ease of Registering Property	-,188	,856	-,147	,004	,032
	5.4 Ease of Starting a Business	,028	-,147	,572	-,171	-,166
	5.5 Ease of Closing a Business	-,079	,004	-,171	,518	-,199
	5.6 Foreign Exchange Controls	-,174	,032	-,166	-,199	,476
Anti-image Correlation	5.2 Ease of Getting a Construction Permit	,780[a]	-,241	,043	-,131	-,299
	5.3 Ease of Registering Property	-,241	,718[a]	-,211	,006	,050
	5.4 Ease of Starting a Business	,043	-,211	,775[a]	-,314	-,318
	5.5 Ease of Closing a Business	-,131	,006	-,314	,774[a]	-,400
	5.6 Foreign Exchange Controls	-,299	,050	-,318	-,400	,742[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
5.2 Ease of Getting a Construction Permit	1,000	,459
5.3 Ease of Registering Property	1,000	,220
5.4 Ease of Starting a Business	1,000	,614
5.5 Ease of Closing a Business	1,000	,665
5.6 Foreign Exchange Controls	1,000	,704

Extraction Method: Principal Component Analysis.

Total Variance Explained

Compone nt	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,663	53,259	53,259	2,663	53,259	53,259
2	,909	18,173	71,431			
3	,687	13,744	85,175			
4	,398	7,957	93,132			
5	,343	6,868	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
5.2 Ease of Getting a Construction Permit	,677
5.3 Ease of Registering Property	,469
5.4 Ease of Starting a Business	,784
5.5 Ease of Closing a Business	,816
5.6 Foreign Exchange Controls	,839

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table A 10 Calculation of the Weights from Factor Analysis – Administrative Burdens and Regulatory Limitations

5 Administrative Burdens & Regulatory Limitations

Rotated Component Matrix

	Component loadings 1	Component weights 1	Overall Weights
5.2 Ease of Getting a Construction Permit	0,677	0,172	0,172
5.3 Ease of Registering Property	0,469	0,083	0,083
5.4 Ease of Starting a Business	0,784	0,231	0,231
5.5 Ease of Closing a Business	0,816	0,250	0,250
5.6 Foreign Exchange Controls	0,839	0,264	0,264
Extraction Method: Principal Component Analysis.			
Expl. Var	2,663	1,000	1,000
Expl. /Tot	1,000	Sum	Sum

Table A 11 Factor Analysis – Socio-Cultural and Political Environment

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,809
Bartlett's Test of Sphericity	Approx. Chi-Square	1227,415
	df	6
	Sig.	,000

Anti-image Matrices

		6.1 Human Development	6.2 Crime	6.3 Bribing & Corruption	6.4 Quality of Political System
Anti-image Covariance	6.1 Human Development	,369	-,004	-,055	-,100
	6.2 Crime	-,004	,528	-,113	-,015
	6.3 Bribing & Corruption	-,055	-,113	,186	-,122
	6.4 Quality of Political System	-,100	-,015	-,122	,193
Anti-image Correlation	6.1 Human Development	,888[a]	-,010	-,209	-,374
	6.2 Crime	-,010	,896[a]	-,361	-,047
	6.3 Bribing & Corruption	-,209	-,361	,755[a]	-,643
	6.4 Quality of Political System	-,374	-,047	-,643	,761[a]

a. Measures of Sampling Adequacy(MSA)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,142	78,545	78,545	3,142	78,545	78,545
2	,497	12,436	90,981			
3	,247	6,170	97,151			
4	,114	2,849	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
6.1 Human Development	,870
6.2 Crime	,789
6.3 Bribing & Corruption	,943
6.4 Quality of Political System	,934

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table A 12 Calculation of the Weights from Factor Analysis – Socio-Cultural and Political Environment

6 Socio-Cultural and Political Enviroment

Component Matrix

	Component loadings 1	Component weights 1	Overall Weights
6.1 Human Development	0,870	0,241	0,241
6.2 Crime	0,789	0,198	0,198
6.3 Bribing and Corruption	0,943	0,283	0,283
6.4 Quality of Political System	0,934	0,278	0,278
Extraction Method: Principal Component Analysis.			
Expl. Var	3,141	1,000	1,000
Expl. /Tot	1,000	Sum	Sum

Table A 13 Factor Analysis – Real Estate Investment Index

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,852
Bartlett's Test of Sphericity	Approx. Chi-Square	2413,531
	df	15
	Sig.	,000

Anti-image Matrices

		1 Economic Activity	2 Depth and Development of RE Market	3 Depth of Capital Market	4 Investor Protection and Legal Framework	5 Administrative Burdens & Regulatory Limitations	6 Socio-Cultural & Political Environment
Anti-image Covariance	1 Economic Activity	,171	-,073	-,078	-,019	,017	-,064
	2 Depth and Development of RE Market	-,073	,206	-,120	,030	-,056	-,025
	3 Depth of Capital Market	-,078	-,120	,313	-,052	,037	,066
	4 Investor Protection and Legal Framework	-,019	,030	-,052	,195	-,093	-,088
	5 Administrative Burdens & Regulatory Limitations	,017	-,056	,037	-,093	,282	-,057
	6 Socio-Cultural & Political Environment	-,064	-,025	,066	-,088	-,057	,167
Anti-image Correlation	1 Economic Activity	,874[a]	-,389	-,336	-,106	,079	-,380
	2 Depth and Development of RE Market	-,389	,853[a]	-,474	,149	-,231	-,133
	3 Depth of Capital Market	-,336	-,474	,803[a]	-,211	,124	,288
	4 Investor Protection and Legal Framework	-,106	,149	-,211	,853[a]	-,397	-,489
	5 Administrative Burdens & Regulatory Limitations	,079	-,231	,124	-,397	,889[a]	-,263

6 Socio-Cultural & Political Environment	-,380	-,133	,288	-,489	-,263	,835[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
1 Economic Activity	1,000	,857
2 Depth and Development of RE Market	1,000	,796
3 Depth of Capital Market	1,000	,589
4 Investor Protection and Legal Framework	1,000	,802
5 Administrative Burdens & Regulatory Limitations	1,000	,713
6 Socio-Cultural & Political Environment	1,000	,814

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,571	76,191	76,191	4,571	76,191	76,191
2	,760	12,673	88,863			
3	,231	3,848	92,711			
4	,215	3,577	96,288			
5	,120	1,993	98,281			
6	,103	1,719	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
1 Economic Activity	,926
2 Depth and Development of RE Market	,892
3 Depth of Capital Market	,768
4 Investor Protection and Legal Framework	,896
5 Administrative Burdens & Regulatory Limitations	,845
6 Socio-Cultural & Political Environment	,902

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Table A 14 Calculation of the Weights from Factor Analysis – Real Estate Index

Real Estate Investment Index

Rotated Component Matrix

	Component loadings 1	Component weights 1	Overall Weights
1 Economic Activity	0,926	0,187	0,187
2 Depth and Development of RE Market	0,892	0,174	0,174
3 Depth of Capital Market	0,768	0,129	0,129
4 Investor Protection and Legal Framework	0,896	0,176	0,176
5 Administrative Burdens and Regulatory Limitations	0,845	0,156	0,156
6 Socio-cultural and Political Environment	0,902	0,178	0,178
Extraction Method: Principal Component Analysis.			
Expl. Var	4,573	1,000	1,000
Expl. /Tot	1,000	Sum	Sum

Appendix D: Detailed Figures and Tables

Figure A 1 Strengths and Weaknesses of 66 Countries in 2009/2010

Country/Region	Rank	1. Economic Activity	2. Real Estate Investment Opportunities	3. Depth of Capital Market	4. Investor Protection and Legal Framework	5. Administrative Burdens & Regulatory Limitations	6. Socio-Cultural & Political Environment
United States	1	100,0	100,0	100,0	100,0	100,0	100,0
United Kingdom	2	90,2	73,6	84,9	105,3	111,5	106,4
Hong Kong	3	85,5	66,7	85,2	111,4	116,4	109,3
Australia	4	91,6	65,0	81,2	94,5	104,7	116,5
Canada	5	90,3	60,0	81,3	100,9	105,6	117,5
Singapore	6	78,5	62,3	73,4	112,1	124,7	109,8
Germany	7	88,7	77,0	67,3	87,7	113,2	115,3
Japan	8	84,5	75,9	79,2	87,9	96,1	100,6
Netherlands	9	90,6	63,2	67,4	87,6	111,5	115,6
Sweden	10	83,4	56,6	66,3	88,7	116,1	123,5
France	11	88,2	75,4	74,8	74,9	95,3	105,1
Switzerland	12	91,6	53,0	74,7	64,4	115,7	125,3
Republic of Korea	13	90,3	66,7	68,8	73,1	110,4	87,0
Denmark	14	79,8	54,2	53,6	102,9	114,9	126,9
Spain	15	79,4	64,9	70,9	75,4	99,8	95,1
Belgium	16	83,2	56,1	52,3	92,1	108,5	110,2
Austria	17	87,9	53,5	44,2	85,0	106,6	120,5
Norway	18	92,0	45,0	39,9	95,4	106,1	122,8
Finland	19	81,5	47,0	37,8	93,6	115,0	128,3
New Zealand	20	75,0	39,0	42,4	112,6	104,4	125,2
Israel	21	84,4	48,5	55,1	94,7	89,4	79,5
Italy	22	73,7	62,3	62,3	56,7	96,8	69,8
Taiwan	23	77,5	60,2	44,0	68,9	103,0	81,8
Malaysia	24	79,7	47,6	56,5	77,5	81,8	65,9
Ireland	25	67,8	47,8	22,6	107,4	121,2	115,8
Poland	26	76,9	44,5	50,2	70,1	88,3	77,5
Greece	27	76,5	54,8	50,8	49,0	87,9	79,4
Portugal	28	68,4	54,6	26,2	67,9	103,5	98,2
Chile	29	73,5	43,8	24,9	78,3	91,3	96,0
Mexico	30	64,6	64,6	39,3	52,6	97,1	43,8
Luxembourg	31	75,9	34,3	18,0	85,3	109,7	125,2
China	32	91,8	73,8	37,5	41,9	69,2	42,3
United Arab Emirates	33	92,5	37,7	29,0	53,0	80,6	88,6
South Africa	34	62,9	53,7	44,6	73,0	84,9	35,4
Romania	35	67,0	35,1	36,2	59,5	102,8	66,9
Brazil	36	78,1	68,8	50,3	42,3	53,6	52,1
India	37	60,6	60,9	68,5	62,2	49,6	42,4
Thailand	38	70,0	42,3	41,0	56,9	80,2	51,3
Turkey	39	66,3	62,2	23,6	55,8	93,8	56,4
Czech Republic	40	78,7	46,3	17,3	71,7	85,5	89,2
Saudi Arabia	41	81,2	47,7	21,4	58,8	107,4	50,8
Hungary	42	58,3	46,2	17,1	71,0	104,5	86,1
Argentina	43	67,4	46,9	32,6	32,7	80,3	54,5
Egypt	44	55,3	44,0	32,8	46,1	84,5	38,0
Indonesia	45	67,4	50,2	35,1	38,3	64,6	38,6
Morocco	46	55,9	41,8	31,7	31,8	90,3	48,8
Croatia	47	62,2	36,2	16,7	50,8	92,5	77,2
Russian Federation	48	70,2	53,8	57,3	34,4	39,3	30,6
Kuwait	49	81,9	22,5	21,6	61,7	65,9	78,8
Slovenia	50	71,1	33,7	10,3	71,2	82,6	100,0
Slovakia	51	75,9	38,2	7,3	69,6	106,5	85,9
Lithuania	52	56,7	27,1	12,4	64,9	116,6	84,1
Oman	53	67,7	27,7	11,9	58,0	84,6	81,9
Bulgaria	54	58,1	30,0	14,5	52,0	99,2	55,1
Philippines	55	56,9	46,6	32,9	35,2	49,1	36,2
Peru	56	64,3	41,6	8,2	55,4	95,2	48,2
Estonia	57	38,6	26,0	7,8	81,0	114,8	98,9
Colombia	58	62,6	48,8	8,6	39,3	92,4	25,3
Latvia	59	30,1	23,8	6,5	77,0	107,3	86,8
Vietnam	60	49,8	31,0	22,0	20,6	67,9	33,0
Uruguay	61	56,4	33,5	3,6	56,6	82,4	96,3
Ukraine	62	50,8	36,4	12,6	46,5	45,3	43,9
Nigeria	63	53,3	30,4	10,9	39,8	40,9	7,1
Kenya	64	12,6	19,4	9,0	43,2	57,9	19,8
Paraguay	65	20,0	15,2	3,2	26,8	93,1	29,2
Venezuela	66	28,0	22,8	5,9	3,2	24,9	13,9

Benchmark: United States = 100 points.