



Regional Allocation of Equities: The Next Decade

The economic and geo-political seismic shifts over the past forty years imply a future that is drastically different from the past. In such an environment, the current market capitalisation, which reflects the historical reality, may not be relied on for building global equity mandates into the next decade. Institutions could benefit from building return expectations and global portfolios that consider these shifts, which would mean abandoning market capitalisation-based weights. Further down the road, a transition from regional allocation to a sounder economic exposure-based allocation would give the investment committees an even greater control over the risk and return profiles of their equity allocations.



Introduction

Should we still do regional allocation of equities and if so, should we follow the same methodology as we have used over the last forty years? This question from one of our clients triggered this issue of Risk Wire.

Many institutions use regional equity allocation based on an approach dating back to the era of highly fragmented capital markets and home biases; an era in which companies had largely regional or even local revenue exposures and technological importance. As market access became global, institutions were able to improve the risk-return profile by expanding the available investment universe and allocating globally, either using **fixed ad-hoc weights**, or later – transitioning to the **market capitalisation-based** weights.

In either approach, regional equity allocation, as currently performed, reflects legacy, historical realities¹. This is fine if the future is broadly similar to the past – a difficult assumption given:

¹ Market capitalisation-based portfolio is only theoretically the unbeatable option, as many assumptions for the Capital Asset Pricing Model to hold are possible only theoretically, particularly when investing globally (e.g. equal access to risk-free capital for all investors).



- the changed composition of the world economy with the emerging markets (EM) being a much bigger part; the emergence of China as a dominant global power - one such example
- the unsustainable levels of inequality in major Western economies
- the transitioning of the economies to combat climate change
- consequences of 40 years of interest rate decline and the uncertain future rates
- aging in all the major economies changing the ratio between economically active and non-active population in a major way
- diverging implementation of legal frameworks
- diverging investment in human capital
- possible reversal of globalisation trajectory because of increasing trade tensions
- post Covid-19, bigger governments in all countries with larger debts

These shifts suggest that building a portfolio based on historical inputs may be wrong. In this study, LINKS considers and quantifies most of the listed shifts. ***We will not use the conventional historical mean-reversion or trend approaches as our premise is that the next decade differs too much from the last 40 years to make the extrapolation of historic trends useful.*** Our methodology is best characterized as ***“building high-confidence expectations”***: we find social and economic developments into the future that are reasonably certain to continue to happen (e.g. ageing population), then we derive the returns implied by those developments.

To make reading of our note more enjoyable we have confined the technical description of the approach to the appendix.

Key Takeaways

- We find a strong relationship between human capital investment (education, health and income) and five-year forward regional company Returns on Equity (ROEs). Since the financial crisis, the US has been markedly lagging in human capital investment from the rest of the world, which will limit the potential of US-based companies compared to their peers in the next decade.
- Although all the regions see a large decline in the weight of working age population, the declines are much smaller in the Emerging Markets (EMs). This shifts the balance of net savers in favour of emerging markets, as higher proportion of retired population in the DM's tends to dissave and cut exposure to risky assets.
- The combined effect of these trends is the expected convergence and decline of Returns on Equity (ROEs) in developed markets from the recent range of 9% (Pacific) - 14% (US) down to the range of 6% (Pacific) - 9% (US). EM ROEs will increase to ~ 15%.
- Expected returns (i.e. including current risk-free rates) will be 4%-5% in DM's and ~12% in EM's. Higher EU and US interest rates (if they happen) can seriously limit the available Equity Risk Premiums, in other words, there is limited compensation for risk.
- Investment Committees should consider exploring a transition away from regional allocation and towards economic risk allocation, which will enable a better control over the risk-return profile of the portfolios in the decade to come.



Trend and impact of drivers: what the data tell us

Inequality: Share of labour in GDP

The relationship between labour share in GDP and ROE should be quite intuitive: lower share means lower labour compensation in comparison with revenues, which means higher margins for companies, i.e. higher ROE. Empirical confirmation of this is evident from a single-country long historical data (Figure 1).

Figure 1: US labour as share of GDP and S&P500 ROE, Source: US BEA, Standard & Poor's

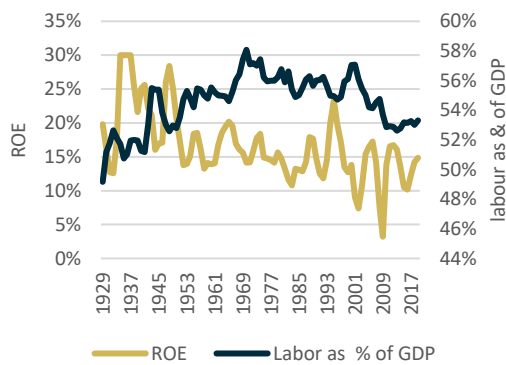
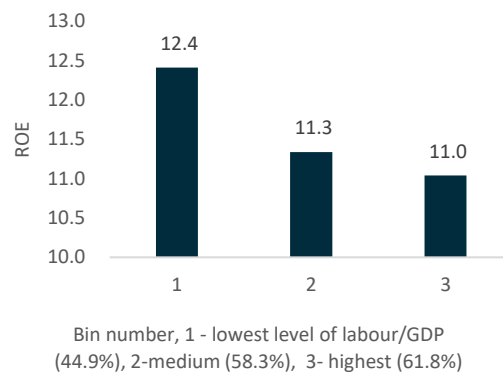


Figure 2: Average ROE by group of countries ranked on labour-to-GDP ratio over the study period



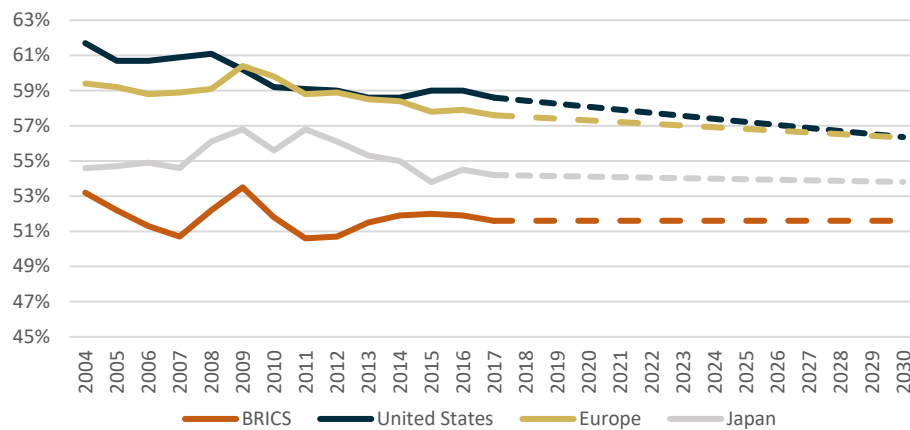
Using the binning technique (see the Appendix), we establish that a unit increase of labour share in GDP brings about -0.18 (calculated as median) unit change in ROE.

Going forward, breaking the trend of falling share of labour in income will require a concerted effort of all major economies in establishing uniform high corporate taxation and minimum wages, along with investment in retraining and education. Since the current political climate is far from accommodating such a cooperative outcome, it is reasonable to expect that the trend of falling share of labour in GDP will continue in the US, Europe and Japan, albeit at a slower pace (our assumption is three-quarters of speed compared to the previous decade) (Figure 3).

In the emerging markets, labour share is cyclical and consistently low. The cyclicality is due to the governments' active role in managing the wage levels and the political environment through the largest state-owned enterprises – a lever that is not available in the large developed markets.



Figure 3: Labour share of GDP, dotted line - expectations, Source: ILO, LINKS for expectations



Investment in Human Capital: Human Development Index

The UNDP-developed Human Development Index is a composite of life expectancy, education and per capita income indicators. We use the index as a proxy for investment in human capital. The hypothesis is that higher investment in human capital over time results in higher innovation and productivity growth rates. The intuition behind the importance in investment in human capital is the fact that most economic “miracles” of the twentieth century were driven by availability of adequately trained and healthy labour force (e.g. China, South Korea). Equally, limited supply of trained labour force in the US at present is a major hurdle for rebirth of the manufacturing industry there.

There is also a degree of academic evidence that human development and economic development are linked. Gustav Ranis of Yale university, for instance, finds (Ranis, 2004) that “human development seems to be a necessary prerequisite for long-term sustainable growth”.

We find that five-year change of the overall HDI index is positively correlated with the average ROE in the subsequent 5 years (Figure 4). It is not surprising that investment in human capital tends to affect ROE’s over the course of a decade: large positive changes in the first five years will begin to pay off in terms of ROE’s in the second five years of a decade.

Figure 4: Average ROE by group (bin) of countries ranked on 5-year change in HDI

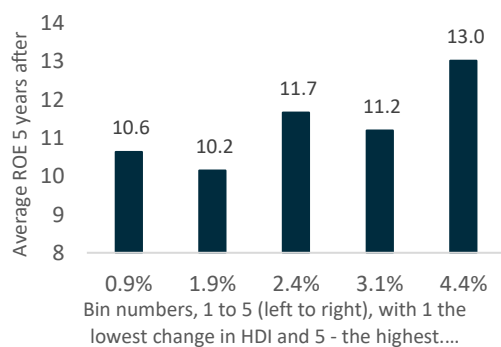
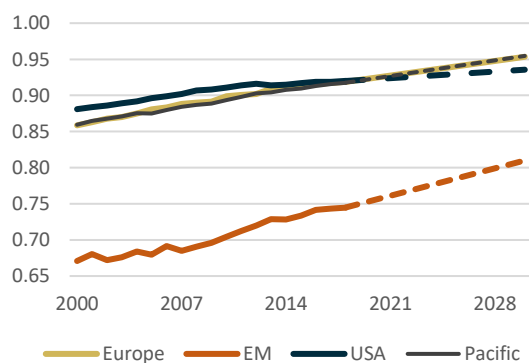


Figure 5: Human Development Index, dotted line - expectations, Source: UNDP, LINKS for expectations





The relationship between changes in HDI and subsequent ROE is estimated at 0.75 percentage point increase in ROE for every unit of increase in the HDI index.

The trends in development of HDI are relatively stable, except for the USA. The US has traditionally had higher values of the HDI index than most European countries. However, the index has recently flattened in the US, and Europe has caught on (Figure 5). We assume that the current rate of growth will continue in all markets except EM. There have been substantial gains in HDI in the EM in the past 2 decades that would probably be hard to repeat going forward. It is assumed therefore that the pace of growth in HDI of EM falls by a quarter.

Degree of Innovation and Automation: Bloomberg Innovation Index

Bloomberg innovation index is an attempt to measure the country’s innovation potential concurrently. Its components include research & development spending, manufacturing (gross value added), market capitalisation of hi-tech companies, level of professional education, research personnel and patents.

While the Human Development Index is a high-level leading indicator, the innovation index gauges the level of innovation and capital invested in it every year in comparison to other countries. Our analysis suggests a strong relationship between the BI index and concurrent ROE’s (Figure 6).

Figure 6: Average ROE by country group (bin) ranked by Bloomberg Innovation index

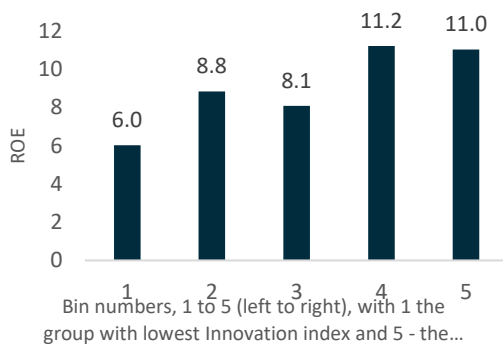
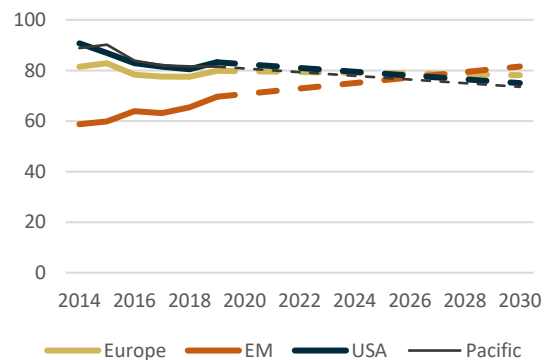


Figure 7: Bloomberg innovation index by region (GDP-weighted), Source: Bloomberg, LINKS



The emerging picture is that of the EM catching up with the rest of the world, while the US and Japan/Pacific plateauing (Figure 7).

Demographics: % of Working Age Population in Total

The demographic structure of the population is **distinct and different** from other factors, in that it affects equity returns via several pathways. The most intuitive pathway is the supply of labour: the higher the proportion of working age population, the easier it should be to find employees for businesses. The second pathway is the income and savings pathway: the higher the proportion of



working age population, the higher the incomes, savings and correspondingly, the demand for risky investment assets, i.e. equities.

The two pathways are different, since the first one has to do with supply of labour for companies and may directly impact ROEs. This impact can be increased because of regulation and taxations changes, such as taxing capital instead of labour. However, the second pathway has to do with demand for equities as investment vehicles and has no effect on ROE at all. Therefore, we need to assess the impact of % of working age population (%WAP) on both ROE (to measure the first pathway) and the Equity Risk Premium (to measure the second pathway).

Based on the binning technique analysis we fail to find any relationship between the %WAP and ROE's (Figure 9). In terms of the direct impact on equity returns, however, %WAP is a far more potent driver.

Figure 9: Average 10-year forward annual equity returns by country group based on % of working age population

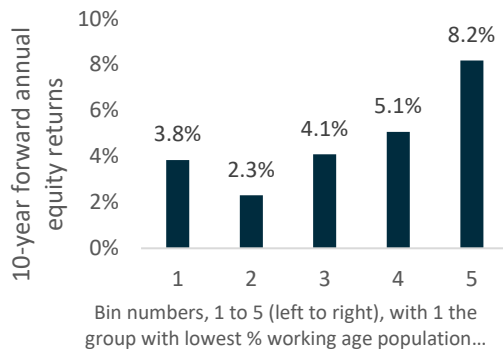
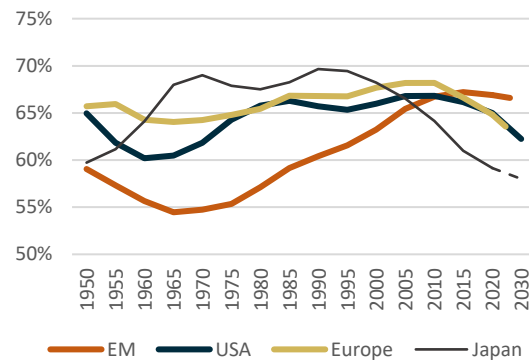


Figure 8: % of working age population (15-65) and forecasts, Source: UN Population Forecast



Clearly, countries with higher proportion of working age population post higher equity returns in the next 10 years. We incorporate this finding directly in our return expectations by region.

Since we have a reasonably good visibility into the future in terms of demographic trends (Figure 8), we can use those forecasts from UN to assess the impact on expected equity returns by region. Although all the regions see a marked decline in the weight of working age population, the declines are much smaller in the Emerging Markets.

Other Drivers

Trade as % of GDP and the three Worldwide Governance Indicators (corruption, rule of law and regulation) in our assessment did not show any evidence of affecting ROE's neither in terms of the levels nor in terms of change.

Considering the extensive coverage of trade disputes in recent times in the media, it is noteworthy that the results for trade as % of GDP show limited consistency over time and across the bins. This can be explained by the fact that in terms of the equity market performance, trade barriers create more of redistribution of wealth with big winners and losers, rather than affect



the equity markets at large. The impact on the real economy may be negative to be sure, as almost all trade barriers create net job losses, however, this is not negative for the equity market in the short- to medium-term.

We also found limited evidence that regulation/governance related indices affect equity returns or ROEs. A typical relationship is that of a “smile”, with both highly corrupt and very non-corrupt countries performing well, while the middle group performing poorly. There is also no consistency over time.

Implied Return Expectations

We begin with estimating expected returns “as is”, i.e. without considering the long-lasting trends, using the formula below.

$$r = ROE(1 - PR) + ROE \times BV/P \times PR$$

Pay-out rates and book-to-market values were taken at the current levels (at the time of writing the report). For ROE’s we took the most recent reported (actual) trailing 12-month earnings over most recently reported Total shareholders’ equity².

These numbers can be interpreted as the most likely expected returns assuming the current structure of the economy and the levels of drivers continue in perpetuity.

Table 1: Expected returns by region given the current values of drivers

	US	Europe	Pacific	EM
ROEs currently	14.0%	9.7%	8.9%	11.6%
Pay-out rate	0.46	0.64	0.45	0.46
Current B/M value (11/08/2020)	0.26	0.62	0.34	0.56
Expected return (ERP + RFR)	9.3%	7.4%	6.2%	9.3%
Expected ROEs given the trends	7.7%	5.6%	5.9%	15.1%
Risk Free Rate	0.58%	-0.52%	0.03%	3.10%

The US companies have consistently posted high ROE’s which even considering the lowest level of book-to-market value (i.e. being most expensive, backed by the least amount of balance sheet value), result in higher expected return at 9.3%. European companies are significantly cheaper (book-to-market value of 0.62), yet the lower level of ROE (9.7%) results in expected returns of 7.4%.

This difference has been the main driver of outperformance of the US equity market in the past decade. However, when we apply the changes in the drivers with corresponding changes in ROEs, the expected returns change considerably (Figure 10 and Figure 11).

² Please note that Covid-19 may have affected these numbers, however, the effect of Covid-19 is outside the scope of the study, so the numbers can be considered pre-Covid.



Figure 10: Change in expected long-term (perpetuity) returns due to the drivers, US Equities, Source: LINKS calculations

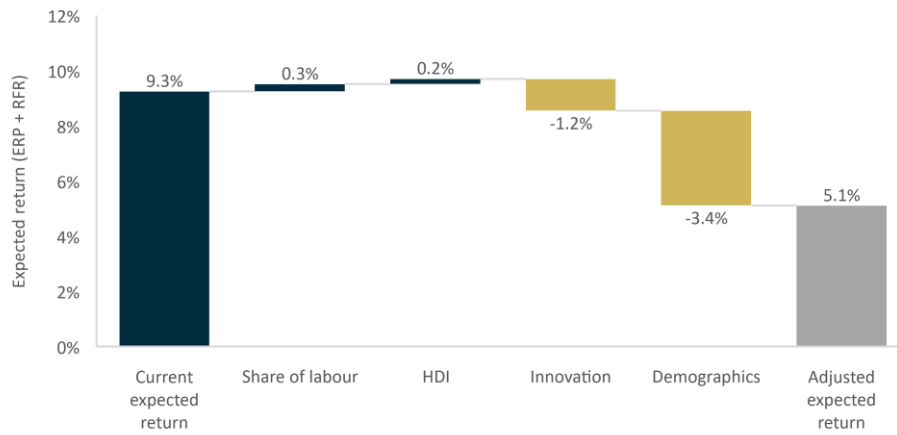
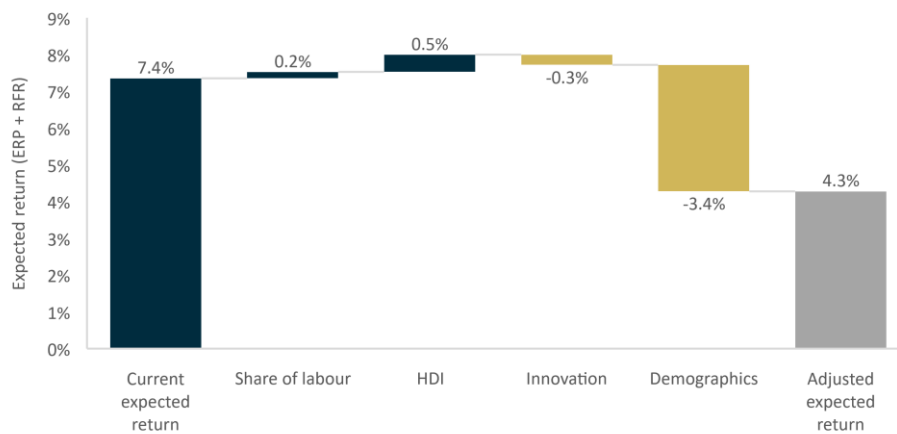


Figure 11: Change in expected long-term (perpetuity) returns due to the drivers, EU Equities, Source: LINKS calculations



While both US and Europe suffer equally from the demographic shifts, European companies will benefit from faster progress in human capital and quality of innovation, if the current trends continue. This means returns in the two regions will converge, though US returns remain higher.

In the Pacific region the demographic trends (ageing) started earlier and has slowed down, which means there will be less pressure from that driver. Since the starting level is at any rate much lower, the resulting return expectation is at par with Europe (Figure 12).



Figure 12: Change expected long-term (perpetuity) returns due to the drivers, Pacific Equities, Source: LINKS calculations

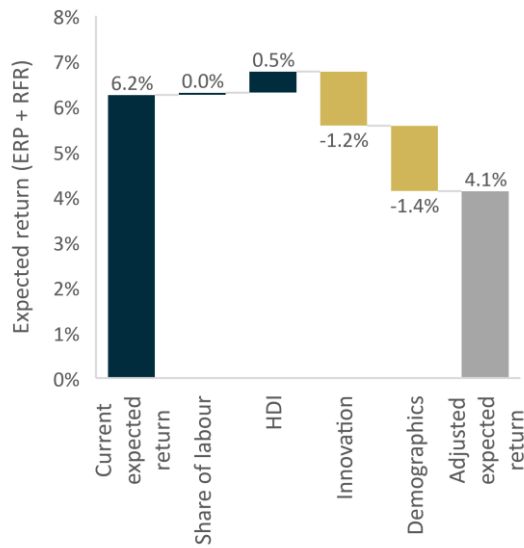
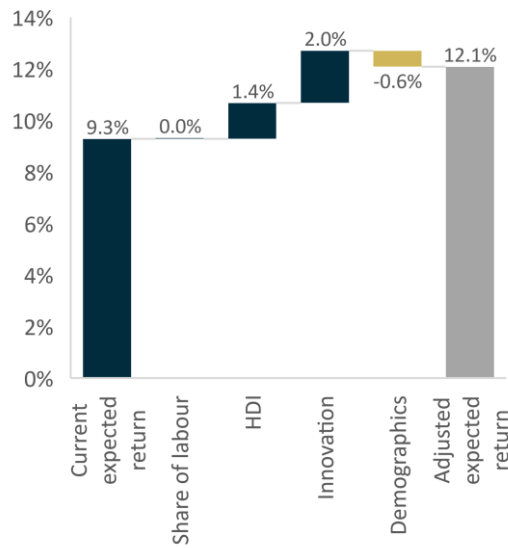
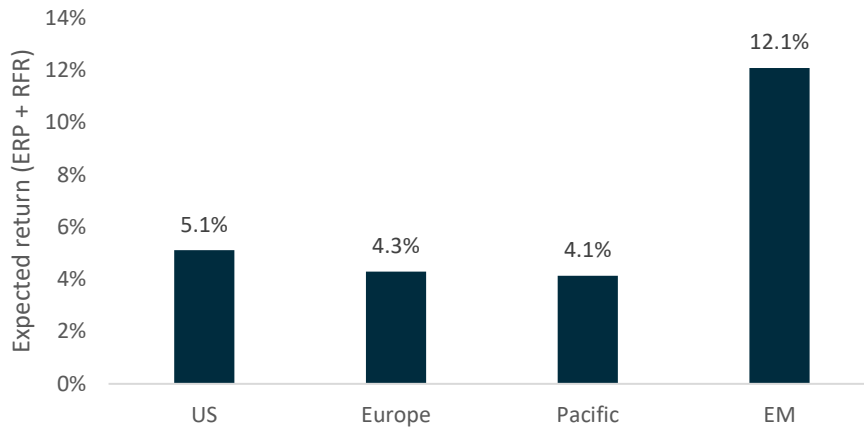


Figure 13: Change in expected long-term (perpetuity) returns due to the drivers, EM Equities, Source: LINKS calculations



The conclusion of this analysis is that all regional returns converge except emerging markets, where returns are expected to be very high (Figure 14).

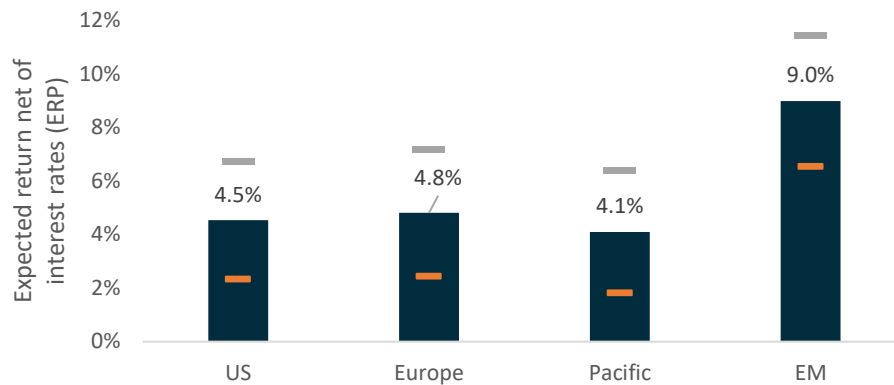
Figure 14: Expected return by region (ERP + RFR), Source: LINKS calculations



Adjusted for the interest rate differences, equity risk premiums in the developed markets virtually converge at 4.1%-4.8% (Figure 15). This however masks the built-in risk of potentially higher interest rates. If the US and European risk-free rates increase to 2-3% range, the level of ERP's will be at 1.1-1.8%, which is a very low compensation for equity risk.



Figure 15: Expected returns net of current interest rates (ERP), Source: LINKS calculations. Horizontal lines show forecast confidence interval



While return expectations of 4% are in-line with what is typically assumed in ALM exercises of pension funds, the large gap of the EM returns is an outlier. Institutions tend to extrapolate (equate) expected GDP growth rates and equity returns. As we have noted in this paper, there is a significant difference between the two. From the historical context, 4%-5% range is quite low. In the US and most countries in Europe, the returns have been over 8%-9%, particularly in the post-1980 period. Factoring in all demographic and other structural changes that we discussed, the ROEs do fall significantly (Table 1), which explains the lower returns.

Although these average return expectations can be a good guide for Asset Liability Management – style exercises, regional equity allocation ignores the growing dispersion of returns between different industries, sizes of companies and the migration of technological ecosystems across the regions. Adjusting the regional return expectations away from historical precedent may be the first step in “future-proofing” the portfolio. But there are still weaknesses that cannot be addressed by merely changing the weights:

- Platform companies (e.g. Google, Alibaba, Amazon etc.) will increasingly play a crucial role globally. Regional performances will be decided by the outcome of multiple “clashes of titans” and not regional specifics.
- Regional mandates will fail to keep up with ever more rapidly shifting global supply chains: domicile and manufacturing capacity in whole industries can shift from one country to another within several quarters due to taxation, regulation etc.
- Handing out regional mandates severely limits the ability of the Investment Committees to shape the risk and return profiles of the underlying equity portfolios (e.g. allocating to Taiwan means exposure to the semiconductor industry, which is the real source of the risk).

In our view, a more comprehensive solution to the regional allocation problem is to abandon it altogether and transition to investing in-line with the global economic value creation. We will continue our work on structuring such an approach and share the results in one of the upcoming issues of Risk Wire.

Mira ABM Return Expectations Applied to Your Portfolio

Interested in looking into what the impact of the adjusted regional returns will be on your portfolio? We will be happy to assist you. Please contact us at info@linksanalytics.com



APPENDIX

The High Confidence Expectations Approach

Carrying out studies with emphasis on forward looking assessment normally results in high degree of uncertainty. This uncertainty often gives rise to lower confidence in the results to the extent that the conclusions are perceived as near random.

To avoid such an outcome in this study, we have used our **building high-confidence expectations** approach, which LINKS uses in all long-term return expectation analyses. Below we describe the building blocks of this approach and elaborate on how the approach is used for assessing the return prospect of Equities for different regions.

The process follows certain pre-determined steps:

- Step 1: clearly establish the **metric** about which we want to build expectation (example: savings rate as the flip side of the consumption rate)
- Step 2: hypothesise about the long-term **drivers** of the metric (example: disposable incomes)
- Step 3: attempt to establish a relationship between the drivers and the metric (example: relationship between disposable income and savings)
- Step 4: **observe** current reliable trends in the drivers (example: ageing population)

Step 1: establish the metric

We want to build expectations about long-term annual return of regional equity indices: US, Europe, the Pacific, Emerging Markets.

Step 2: compile the list of drivers

In this phase we must list all possible long-term drivers of equity returns. It is important to differentiate two fundamentally different return concepts:

- **Return on Equity (ROE)**: the combined profit a company or a set of companies make in a year divided by the book value of the shareholder equity of the company (s).
- **Equity return**: the actual share market price appreciation and the dividends received from the shares divided by the initial investment value of the investor.

Establishing a direct relationship between equity returns and drivers has always been difficult, as the market prices of equities are very volatile in the short term. Matching the period of the impact of the driver and the equity return is often difficult.

Establishing the relationship between these drivers and ROE is considerably easier, as ROE does not have a market price component and therefore is not very volatile. At the same time, sustainably higher ROEs inevitably result in higher equity returns, as ROE captures most value drivers of equities as an asset category.

We therefore assess the relationship between various economic, social, geo-political parameters and ROEs by region and then derive the expected change in ROEs and corresponding expected equity return improvements.

There is always the risk of missing relevant drivers. However, it is not necessary to have all important drivers, merely, **all important drivers that are undergoing a structural shift**. All drivers



that are broadly static over time, are probably largely reflected in the current equity multiples and expected returns. What we are looking for is major drivers that are changing. Some of these drivers impact the overall **growth rate** (size of the economic pie), while others impact the **distribution** (share of the economic pie of equities) (Table 2).

Table 2: Equity return and ROE drivers considered in the report

Long-lasting trend	Impacts	Measure
Inequality	Distribution	Share of labour in GDP, %
Investment in human capital	Growth	Human Development Index, UN
Degree of innovation, automation	Growth	Bloomberg innovation index
Demographics	Distribution, Growth	% of working age population, UN
Globalisation and trade tensions	Growth, Distribution	Total trade as % of GDP
Regulation	Distribution	Worldwide Governance Indicators, WB
Corruption	Distribution	Worldwide Governance Indicators, WB
Rule of law	Distribution	Worldwide Governance Indicators, WB

The list of drivers was compiled based on available corroboration from academic literature as well as clear and evident transmission mechanism. The relevance of each driver is discussed separately in the Results section.

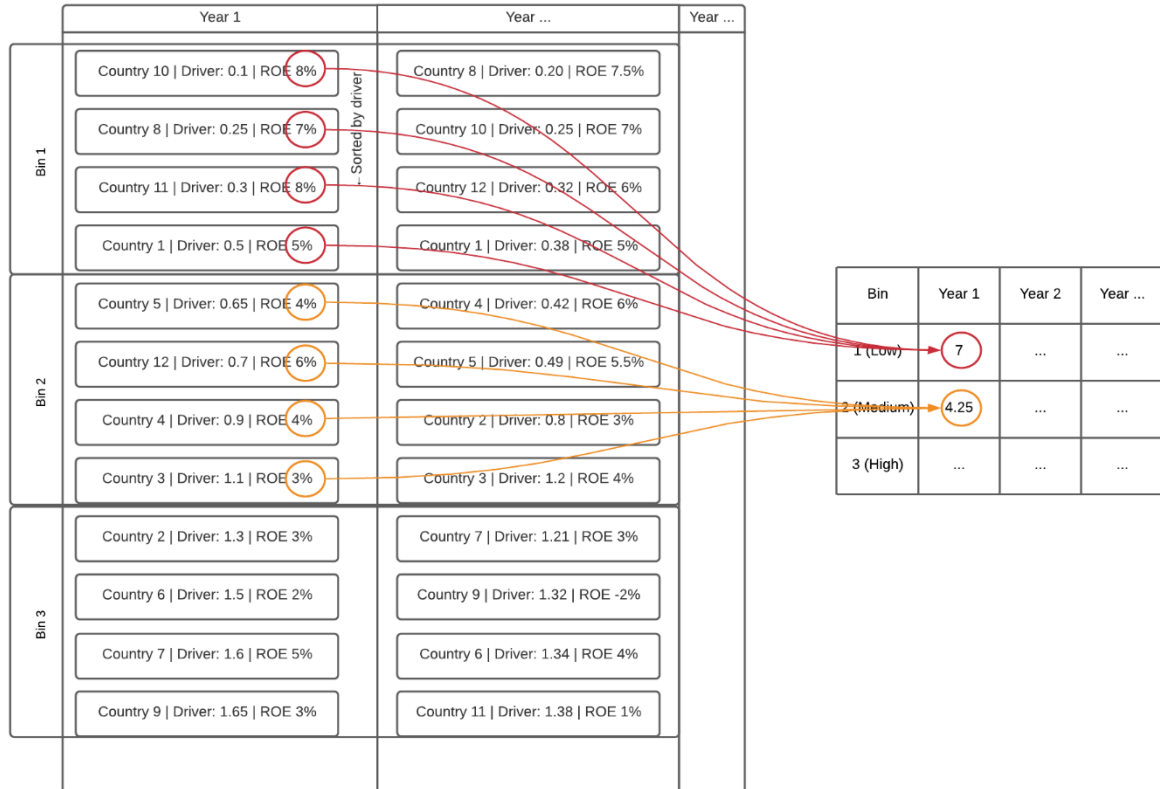
Step 3: establish the relationship between drivers and returns

There are many complex methods that can be used to establish a relationship between the drivers and returns. The complexity of such a relationship across time would mean that time series methods, such as ARIMA, would not only require significant adjustments to the data (removing trends, normalising etc.), but would also yield results that are hard to explain and intuitively understand, resulting in a “black box” effect.

We have therefore opted to use a relatively simple approach: applying a binning technique to panel data of ROEs across countries and years. The diagram (Figure 16) illustrates the approach taken.

Figure 16: Illustration of the binning technique

Each year countries are sorted based on the value of the driver (e.g. share of labour in GDP). The sorted list is split into several bins (3 in the illustration). The simple average and/or median of ROEs or equity returns is then taken as the ROE/return of that year for that bin. Consistent difference in ROEs by bin and across years would indicate an existing relationship.



This technique has several advantages in our application:

- Trends over time do not affect the conclusions, as each year all countries are compared cross-sectionally
- Outliers (extreme values of drivers) do not affect the outcomes
- To the extent possible, missing “other factors” are not an issue, as the countries are diversified within each bin – in our analysis we used 29 developed and emerging markets

The binning process will highlight any pattern existing in the relationship between the driver and ROE. For instance if the mean and median ROE’s of Bin 1 is higher than that of Bin 2, which in turn is higher than that of Bin 3, we could say that there is a negative relationship between the driver and ROE. **It is important to note that not all drivers in our study exhibited a relationship with ROE.**

Step 4: observe current reliable trends

The advantage of using long-lasting trends is that their presence can be empirically verified, understood and reliably extrapolated. Of course, not all trends will have the same degree of “predictability”, but the confidence on the average is much higher than with market-related metrics such as equity returns or interest rates.

There is a judgement involved in extrapolating trends such as inequality, degree of innovation or to a lesser extent – demographics. Where possible, we adopt the somewhat neutral approach of



taking external independent estimates. This is possible for instance in case of ageing population. In the other cases certain judgements had to be made; they have been made explicitly and covered in detail in the results section.

Once the future values of the specific measures are estimated, we then translate those values into respective changes in ROE based on the relationship established using the binning technique. Changes in ROE are then translated into corresponding changes in the expected equity returns.

Example: unit increase of labour share in GDP brings about -0.18 (calculated as median unit change) unit change in ROE. Labour share in GDP has been falling in the US and Europe at a rate of about 0.25% a year. Extrapolating this trend into 2030 by assuming a slower pace (at 3/4 of the historical speed), we get a 0.75 * 0.25 * 10 = 1.9% change in 10 years, which translates into -0.18 x -1.9 = 0.34% higher ROE for Europe in 10 years. Put it differently, if companies continue to increase margins thanks to automation and globalisation at the 3/4 pace of the history, European ROE's will improve by 0.34% in 10 years. The impact on equity returns then we can get by calculating the ERP using the formula below:

$$r = ROE(1 - PR) + ROE \times BV/P \times PR$$

If **current actual** book-to-market value is 0.62 and the pay-out rate is 0.64 and current average ROE is 9.7%, the added return due to falling labour share in GDP is 0.104 (1-0.64) + 0.104 x 0.62 x 0.64 = 7.8% minus 0.097 (1-0.64) + 0.097 x 0.62 x 0.64 = 7.3% or 7.8%-7.3% = **0.5%**

While the example above is somewhat technical, it serves the purpose of illustrating the actual thought process involved, the degree of transparency and intuition involved in return estimation.

Data

Return on Equity numbers have been sourced directly from Bloomberg for 29 countries in our study (Table 3). Data for most indices are available from 2000, except for US, Spain and Japan, where data are available from early 1990s. Since we need the full set of countries, our study begins in 2000.

Table 3: ROE data source - countries and respective Bloomberg index codes.

Country code	BB Index	Country code	BB Index	Country code	BB Index
AUS	AS51 Index	DEU	DAX Index	NLD	AEX Index
AUT	ATX Index	GRC	ASE Index	NOR	OBX Index
BEL	BEL20 Index	IND	SENSEX Index	PHL	PCOMP Index
BRA	IBOV Index	IDN	JCI Index	PRT	BVLX Index
CAN	SPTSX Index	IRL	ISEQ Index	RUS	IMOEX Index
CHN	SHSZ300 Index	ITA	FTSEMIB Index	ESP	IBEX Index
DNK	KFX Index	JPN	TPX Index	SWE	OMX Index
FIN	HEX Index	KOR	KRX100 Index	CHE	SMI Index
FRA	CAC Index	MEX	MEXBOL Index	TUR	XU100 Index
GBR	UKX Index	USA	SPX Index		

Remaining data were sourced from a variety of databases depending on the topic (Table 4).



Table 4: Data sources for drivers

Measure	Source	Data item
Share of labour in GDP, %	International Labour Organisation	SDG indicator 10.4.1 - Labour income share as a percent of GDP (%)
Human Development Index, UN	United Nations Development Program (UNDP)	Human Development Rankings
Bloomberg innovation index	Bloomberg	Bloomberg Innovation Score by country
% of working age population, UN	United Nations Population Forecast	Population by age group, both sexes
Total trade as % of GDP	IMF World Economic Outlook	Trade (% of GDP)
Regulation	Worldwide Governance Indicators, World Bank	Regulation index
Corruption	Worldwide Governance Indicators, World Bank	Corruption index
Rule of law	Worldwide Governance Indicators, World Bank	Rule of law index

Book-to-market values and pay-out rates by region are sourced from LINKS Mira ABM by region. These are calculated weekly based on bottom-up aggregated data sourced from Bloomberg.

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