

March 2, 2010

## Japan Strategy The Irrelevance of “Demographics”?

**It is an article of faith amongst the bears that Japanese stocks are condemned on account of the country’s “demographics”. We examine this perspective and find it unconvincing.**

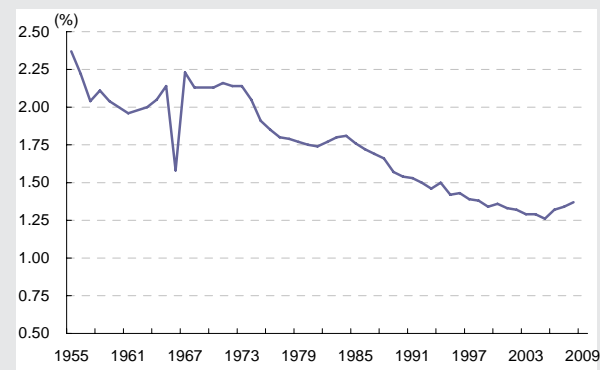
Widely used estimates assume that the population falls to zero. History suggests that these estimates will be wrong.

**Labour input has already fallen dramatically; TFP growth has slowed:** We find that investors underestimate the degree to which a fall in labour input has been an important factor in the post-1990 GDP growth slowdown. Total Factor Productivity growth has also halved relative to the pre-1990 period. These factors can be reversed irrespective of demographics. Demographics is likely to offer little useful perspective on growth over time-frames of relevance to investors.

**Demographics may not be relevant to stocks in the way the consensus thinks:** Stock returns are not correlated with either GDP growth or GDP growth per capita. Inflation (or its absence) is a major factor in nominal returns. Valuation is the measure of future return potential. Conventional demographics has nothing to say in respect of these questions. Indeed, there is some evidence from the US that Japan’s changing age structure may be consistent with higher P/Es on average.

**Demographics can be argued the other way round:** There is some evidence from the US that over the long run, valuation is related to the age structure of society. A rising MY (middle aged to young) ratio - such as Japan will enjoy until 2021 - may allow valuations to trend higher.

### Japan’s Total Fertility Rate Has Bottomed Already



Source: MHLW, Morgan Stanley Research

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## The Irrelevance of “Demographics”?

### Demographic Gloom Examined

**Contentious alarmism elevated to the status of a secular religion.** In our discussions with investors the most often cited reason for not investing in Japan, or for being bearish on the long run outlook in Japan, is “demographics”.

Apparently, an inevitable, open-ended, decline in the population will lead to the shrinkage of the economy, of profits and of stock prices.

We have re-examined this perspective and find it unconvincing. We argue that:

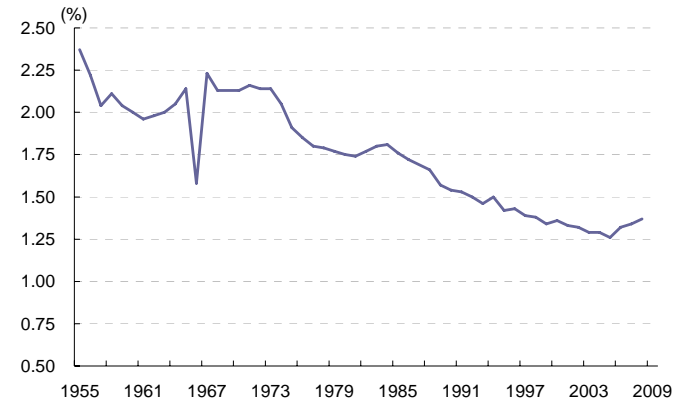
1. It is not clear that demographic estimates are accurate over long time frames. In fact, while spurious specificity is one of the attractions of demographics as a talking point, the fact that neither death rates nor birth rates have proven predictable should caution one against accepting any assertion about demographics.
2. It is not clear that demographics are the critical variable in determining the level of economic growth. That role falls to the growth rate of TFP.
3. It is not clear that equity returns are related to absolute levels of growth. Equity returns are an issue of valuation. Nominal returns are greatly affected by inflation too.
4. It is not clear that demographic change, even if it is allowed as a negative for economic growth, is necessarily negative for stocks, as certain forms of demographic change may be associated with a rising equity market multiple. Demographic change could in fact represent a benign environment for stocks.

One cannot help but be amused that demographic angst is peaking even as Japan’s birth rate has already stopped falling (Exhibit 1).

We advise investors to attach little importance to this issue.

Exhibit 1

### Japan’s Total Fertility Rate has bottomed already



Source: MHLW, Morgan Stanley Research

### Debate 1: If it’s alarmism why’s it so popular?

**Market’s view:** It’s not alarmism.

**Our view:** It is largely alarmism, but attractive because it absolves policy makers of responsibility for Japan’s dire economic performance since the late 1990s and feeds a generalized desire to believe in Japanese exceptionalism.

**Contentious alarmism.** The reliability of long-term demographic estimates is vanishingly low. So why does demographic gloom enjoy such currency now?

There are three underlying reasons, we believe, for its popularity.

First, stocks have gone down since 1990. The extraordinary length of the Japanese bear market has provided fertile soil for the development of theories as to why this was inevitable.

Second, promotion of demographic scare stories absolves policy-makers of responsibility for Japan’s economic record since the 1990s. There was, it appears to say, no alternative. In reality, of course, this is no more than a novel restatement of the traditional bureaucratic refrain that it cannot be they, but rather the people, who are at fault. At the same time, of course, a declared “crisis” validates yet further interference in ordinary people’s lives.

Third, belief in demographic scare stories is uncomfortably close to the recurring theme that Japan is different only this time dressed up in quantitative clothes. Our experience is that every time such an assertion has been made, it has quickly been shown to be mis-guided.

Our advice to investors is to give up on things such as demographics about which very little can be known and to concentrate instead on prosaic considerations such as valuation, sentiment and fundamentals.

Ever since Malthus, demography has exerted a fascination over some people. Nicholas Eberstadt, a scholar at the America Enterprise Institute and a member of Harvard University's Center for Population and Development Studies, has written about actual difficulties encountered in relying on demographic estimates<sup>1</sup>.

He highlights, for instance, the suggestion by a leading biologist in the 1920s that the US population would finally reach 200 million by the 22<sup>nd</sup> century. The population in fact exceeded this estimate in the 1960s.

More apposite to the Japanese case is the gloom surrounding France's demographic outlook in the 1920s and 1930s. Commonly accepted estimates called for a fall in France's population of between 5% and 30% over the fifty years between 1930 and 1980. France's population actually rose 30% over the same period.

Population-based alarmism also has a poor record. One study suggested that 20% or so of the world's people in 1968 would die of famine unless the global population was reduced to 1.5 billion people<sup>2</sup> or fewer even than the estimated 1900 population of 1.6 billion. The population today is actually over 6 billion.

This sort of pessimism reached its peak with the notorious Club of Rome publication, *The Limits to Growth*, in 1972. This argued that the global population was about to collapse without significant policy intrusion into people's lives. Both populations and the economies continued growing.

A 2008 study of errors in UN estimates of population growth in non-Japan Asia<sup>3</sup> found that:

*"...A decomposition of the total projection errors into base errors (wrong estimates of demographic conditions at the beginning of projection interval) and change errors (wrong assumptions about the trends) shows that the base errors have generally been decreasing over time ... The change errors, however, do not seem to decline over time. This seems to be due to a number of country-specific cultural and political factors whose effect was not anticipated as well as to a lack of good theories with predictive power."*

In other words, researchers became better at explaining the past but no better at forecasting the future.

What population specialists do when they make these errors is to assume that the birth rate observed today will remain constant in the future, or that it will trend back over time to the replacement rate.

In Japan's case, straight-lining recent fertility trends (as is effectively the case in official estimates) implies that the very last Japanese baby will be born in roughly 1,000 years. Once the birth rate is lower than the replacement rate there is no other possible outcome; only the timing can vary.

The unrevealed assumption, then, behind the mathematics used to arrive at widely-used population estimates is that the Japanese population will drop to zero. One cannot help but suggest that the logic of demographic pessimism is circular.

To the extent that fertility trends are at all predictable, it could be argued that Japan's birthrate is unlikely to fall further. Indeed, recent data suggests that the total fertility rate has already troughed and begun to recover (Exhibit 1).

Economic demography has observed that, as a society becomes richer, the birthrate tends to fall. Japan's experience is not unusual in this respect. European countries demonstrate the scope for a rebound. Indeed, the recent bottoming of the total fertility rate is occurring at GDP per capita levels similar to those which obtained when parts of Europe started to experience higher birth rates.

<sup>1</sup> e.g. *Population Sense and Nonsense*, Nicholas Eberstadt, AEI, 2002

<sup>2</sup> *The Population Bomb*, Paul Ehrlich, Ballantine Books, 1968

<sup>3</sup> *How well did past UN Population Projections Anticipate Demographic Trends in Six South-East Asian Countries?* Hafiz T. A. Khan; Wolfgang Lutz, *Asian Population Studies*, Volume 4  
<http://www.informaworld.com/smpp/title~db=all~content=t714592815~tab=issueslist~branches=4-v4>, Issue 1, March 2008, pp77-95

Those with longer historical perspective will remember that plagues, after decimating the population, have usually been followed by a period of unusually high fertility. What is more surprising is that this period of high fertility tends to end when the population has been restored to the path it would have enjoyed without the interruption of the plague.

It seems reasonable to conclude that we know much less than we might think about the forces working on fertility. It also follows that government measures designed to raise the birth rate could only be effective by accident.

Our scepticism about the value of demographic analysis has broader economic implications. One sub-school of demographic pessimism alleges that there is some type of time bomb in the design of the public pension system and that this time bomb renders the Japanese fiscal position “unsustainable”.

But Japanese official estimates of pension system costs are based on official demographic estimates. Given that they are programmed to forecast a Japanese population of zero, they can reach no other conclusion than that Japan faces fiscal collapse.

As the US academics, Broda and Weinstein, noted in a famous paper in 2004<sup>4</sup>, it is right to conclude that widely used numbers “assume unsustainability rather than being able to answer *whether* the Japanese fiscal situation is unsustainable”.

Their sensible conclusions about the fiscal “challenge” posed by demographic change are worth noting:

*“...If Japanese want to have generous expansions in government expenditures for themselves and the elderly, then Japanese government outlays and receipts will look a lot like those in Europe today. If they want to keep the real growth rate of per capita expenditures positive but only equal to GDP growth, then Japanese government outlays and receipts will look like those in the US. The bottom line is that we could construct no scenario in which Japanese tax rates needed to rise above those found in many high income countries.*

*The message, then, is clear. If Japanese voters want more benefits for the young and old, then they will have to pay for them, but Japan’s future in this regard does not look any different than that of a typical OECD country.”*

<sup>4</sup> *Happy News from the Dismal Science: Reassessing Japanese Fiscal Policy and Sustainability*, Christian Broda & David E. Weinstein, NBER Working Paper no. 10988. <http://www.nber.org/papers/w10988>

Our view, then, is that demographic estimates are usually unreliable, and that demographics scarcely matter anyway. Japan is neither a better investment nor a worse investment than anywhere else on the basis of “demographics”.

## **Debate 2: Demographic impact on economic growth**

**Market’s view:** Without population growth Japan’s economy is condemned never to grow.

**Our view:** Population growth is merely one factor of potential relevance to trend economic growth. The real issues are Total Factor Productivity (TFP), and cyclical factors at work on labour input growth.

**Efficiency, not inputs, is what matters to growth.** The consensus that Japan cannot grow in the absence of population growth is an overstatement. Japan could quite easily grow at a good rate, especially in per capita terms, for a high-income developed country even in the face of a falling population (or more precisely a falling working age population).

All that is required is for TFP growth to accelerate back to the level of growth enjoyed by Japan prior to the bursting of the Bubble in 1989. TFP slowdown preceded the population peak. Variation in TFP performance not in labour input growth is likely to be larger than the negative effects of population change.

**Breaking down growth.** Growth accounting breaks down the sources of growth into growth of labour input, growth of capital input, and a residual, usually identified as “technical progress”, or Total Factor Productivity.

It is a hallmark of a particular genre of analysis that TFP is ignored – especially when economic “miracles” are alleged. TFP is reinstated to its correct position in the hierarchy of analysis when the bubble that usually clothes an alleged “miracle” bursts. This occurred most memorably at the time that Asia’s alleged miracle collapsed into the Asian Crisis of 1997-1998, as presaged in the work of MIT’s Alwyn Young and Paul Krugman.

The difficulty with TFP is that it is impossible to estimate with precision. As it is a residual, it is not easily grasped in concrete terms. As a catch-all it may include factors which strictly speaking lie outside commonly accepted interpretations of technical progress (for instance, as an economy moves away from agriculture towards industry, TFP’s rise may be partly attributable to changes in the weights of various types of activity which are either intrinsically low TFP and high TFP, rather than improvements in TFP per se).

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Equity investors should be aware of the question, but careful of over-interpretation of the data, in our view. TFP can quickly be seen to be recognized as a close cousin of equity market concepts of capital efficiency, and for this reason it requires some attention. Nonetheless, for the investor, the insuperable drawback of TFP is that it is not data that can be estimated in real time.

Both the level and the growth rate of TFP diverge widely between countries. Estimates of Japan's level of TFP usually put it at around 70-80% of that of the US – which is habitually used as the benchmark.

The opportunity for growth in Japan is the closing of this differential. It does not lie in further growth of the kind so often seen in developing countries – based on input mobilization as opposed to the extraction of efficiency gains. What investors want – and what they would reward – is not a high growth rate generated by balance sheet expansion, but growth delivered without additional capital input.

Exhibits 2-4 show TFP estimates made by a Research Institute of Economy Trade and Industry (RIETI, a METI related think tank) study group (under Prof. Fukao of Keio University).

The most notable feature of these estimates – apart from their detail – is the drop in labour input which has characterized the last 15 years.

Labour input has in fact fallen at an accelerating pace over the past 20 years. It is clear that the fall is principally a decline in man-hours. This cannot be simply a function of a decline in the working age population because that decline only began in 2000. Instead, its origins must lie in rising unemployment and under-employment.

A persuasive new paper, *The Paradox of Toil*, by a researcher at the NY Fed<sup>5</sup> argues that a decline in labour input is a natural consequence of a deflationary economy with zero (or effectively zero) interest rates.

His argument is closely related to the fallacy of composition at the heart of Keynes' paradox of thrift (in which every individual's desire to increase saving leads to less saving in aggregate).

The paper posits an initial disturbance of the economy that puts downward pressure on wages. Firms respond by cutting prices, which strengthens deflationary expectations, driving real interest rates higher. The Central Bank cannot respond because nominal rates are already at or effectively at zero in nominal terms. Firms require less labour. Wages fall, but more labour supply – as everyone tries to work more – cuts wages further, causing more deflation, higher real rates, and so on.

While it is sensible for everyone individually to want to work, everyone wanting to work reduces labour input in the aggregate once nominal rates cannot respond.

Many will recoil from such a perspective because it embodies a Keynesian view. But Keynes knew a thing or two about deflation, perhaps rather more than us who have lived in an inflationary age. It seems to us that the Keynesian perspective has much more to offer in respect of deflationary Japan than do superficially plausible views conceived in inflationary periods in other countries. At least, Mr. Eggertsson's paper seems to reflect the actual experience of Japan rather better than does consensus thinking.

Our sense is that the fall in labour input Japan has experienced over the past 20 years is a widely underestimated factor. And the reasons, perfectly reversible ones, for its fall are even more widely misunderstood.

The implication of this, though, is that the horrors of declining labour input and low growth which are projected for us by demographic bears are in reality old news. Recent experience would suggest that cyclical factors (a deflationary shock and immobile nominal rates) are likely to be important in determining changes in labour input – perhaps more so than the supposedly inexorable march of demographic change.

The onset of the withdrawal of labour input occurs in the early 1990s – a period characterized not by a falling working age population, but by the post-Bubble bust. A sensible starting position might be that cyclical conditions have so far proven more important than demographics in influencing labour input. It seems unnecessarily aggressive to suggest that this will change.

Stabilising the economy – in particular deflation – to broaden the possibilities for labour to find rewarding employment and to kill the “paradox of toil” identified in the NY Fed paper seems rather more urgent a question than issues such as “immigration” and the other paraphernalia of demographic angst.

<sup>5</sup> *The Paradox of Toil*, Gauti Eggertsson, Federal Reserve Bank of New York Staff Reports, no. 433, February 2010

Exhibit 2

## Labour Input Has Dropped Dramatically Since 1990, As Unemployment and Under-employment Have Risen

Macro (Excluding Housing and Activities not elsewhere classified)							
%	1970-74	1975-79	1980-84	1985-89	1990-94	1995-1999	2000-2005
GDP growth rate	4.43	4.54	4.15	4.62	1.17	0.92	1.23
Contribution of labor input growth	0.50	1.73	1.07	0.68	-0.06	-0.37	-0.43
Man-hours growth	-0.43	0.90	0.35	0.22	-0.58	-0.90	-0.86
Labor quality improvement	0.93	0.83	0.72	0.46	0.51	0.54	0.44
Contribution of capital input growth	1.40	1.18	1.87	1.90	1.28	0.83	0.72
Increasing in capital quantity	2.18	1.29	1.51	1.46	1.25	0.68	0.49
Capital quality improvement	-0.77	-0.11	0.36	0.45	0.03	0.15	0.23
Contribution of TFP	2.52	1.63	1.22	2.03	-0.05	0.46	0.94

Divisia index, Use cost data

Figures are Overall; Exhibits 3 and 4 shows figures for Manufacturing and Non-manufacturing Source: RIETI

Exhibit 3

## Manufacturing

Manufacturing sectors							
%	1970-74	1975-79	1980-84	1985-89	1990-94	1995-1999	2000-2005
GDP growth rate	4.18	3.34	7.11	4.89	0.47	1.12	1.44
Contribution of labor input growth	-1.04	1.31	1.46	0.19	-1.68	-1.31	-1.26
Man-hours growth	-1.68	0.77	1.00	-0.28	-2.20	-1.93	-1.92
Labor quality improvement	0.64	0.54	0.46	0.47	0.52	0.62	0.66
Contribution of capital input growth	0.98	0.35	1.55	1.78	1.26	0.56	1.39
Increasing in capital quantity	1.69	0.39	1.07	1.38	1.17	0.39	1.03
Capital quality improvement	-0.71	-0.03	0.48	0.40	0.08	0.17	0.36
TFP growth	4.25%	1.68%	4.10%	2.92%	0.89%	1.87%	1.32%

Divisia index, Use cost data

Source: RIETI

Exhibit 4

## Non-Manufacturing

Non-manufacturing sectors (Only market economy, Excluding Housing and Activities not elsewhere classified)							
%	1970-74	1975-79	1980-84	1985-89	1990-94	1995-1999	2000-2005
GDP growth rate	3.92	5.19	2.79	5.36	1.19	0.64	1.06
Contribution of labor input growth	0.91	1.76	0.82	1.04	0.32	-0.31	-0.78
Man-hours growth	-0.21	0.77	0.00	0.45	-0.19	-0.82	-0.99
Labor quality improvement	1.12	0.99	0.83	0.59	0.51	0.51	0.21
Contribution of capital input growth	1.51	1.48	1.95	2.08	1.38	0.87	0.57
Increasing in capital quantity	2.15	1.48	1.59	1.62	1.22	0.68	0.37
Capital quality improvement	-0.64	0.00	0.36	0.46	0.15	0.19	0.20
TFP growth	1.50	1.95	0.02	2.24	-0.51	0.07	1.27

Divisia index, Use cost data

Source: RIETI

### There is no calamity waiting for Japan

In particular we would emphasise that labour input and the labour force are different concepts. It is labour input, not the number of workers, that matters for a TFP-based analysis.

Given our skepticism about the long-run reliability of demographic forecasts, and our preference for measures of labour input, we are not convinced that one is adding much by discussing numbers of workers. Nonetheless even in the narrow terms in which the demographic question is usually addressed, the next 7-10 years may not be a period in which a reasonable estimate of the true labour force falls much further.

Looking over the next twenty years, the young, even if born in more significant numbers from tomorrow onwards, would not enter the workforce.

As a little thought experiment, we constructed an alternative estimate of the labour force. Here, instead of taking the usual definition of the work force as those aged between 15 and 64 we have used the total for the age group 20-65 – a more realistic approach, in our opinion.

Exhibit 5 shows the development of alternative projections of the working age labour force. The thin line which falls sharply is the official estimate. The thicker, flatter, line is an adjusted estimate we produced on the assumption that every five years the upper age cut-off is raised by one year from 65. In other words, that people work longer. By 2035 they would be working till 70.

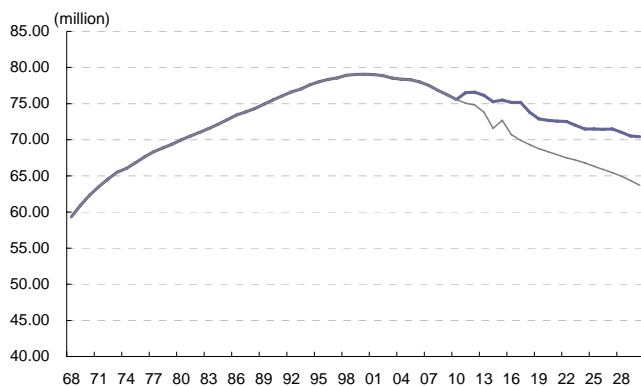
As can be seen, such small adjustments make a huge difference to the path of the labour force. Our conclusion is not that our adjusted estimate is necessarily correct (far from it given our basic suspicion of any demographic forecasting), but that realistic assumptions call into question extremes of pessimism that today enjoy broad currency.

Our estimates suggest that a realistic estimate of the available labour force might now be essentially flat at just above 75 million till 2017 before experiencing a renewed decline thereafter. One suspects that 7 years is an adequately long timeframe for most investors.

By 2030 the difference between our adjusted case and the official estimates would be 7 million workers. The compound growth rate of the labour force between now and 2030 on our estimates would be a mere -0.4%.

While the rate of change in the available labour force and labour input growth are not the same, one can easily make the case that against a slow decline in the available labour force there is little support for the idea that labour input will collapse. There is no calamity waiting for Japan.

Exhibit 5  
**We Estimate the Labour Force Could Be Broadly Flat in 2010-17, Versus the Official Estimate of a Significant Drop**



Note: Official estimate in grey, Morgan Stanley's alternative estimate in blue.  
Source: IPSS, Ministry of Internal Affairs and Communications (Statistics Bureau), Morgan Stanley Research

Re-examining Exhibits 2 to 4 it seems a reasonable assumption from which to start that, over the longer run, the withdrawal of labour input proceeds at roughly the pace at which new capital is mobilized. They cancel each other out and perhaps on a conservative assumption should be expected to continue to do so. (This is actually a pessimistic perspective which excludes the possibility of a stabilization in deflation and a cyclical normalization of labour input growth.)

It follows therefore that the growth rate of Japan will be the growth rate of TFP. The issue for investors then, is not some unreliable long run estimate of the population but whether TFP growth can accelerate back to the levels it enjoyed prior to the bursting of the 1980s Bubble. For the 20 years from 1970 it averaged 1.85%. For the 15 years from 1990 it has averaged 0.94%.

The cause of Japan's "growth problem" is not demographic. It is a deceleration in TFP and a withdrawal of labour input. It is this upon which we should be focused – especially as Japan's TFP level appears to have stalled far below other comparably developed countries.

On the other hand, given the low level of TFP in Japan and the historical weakness of arguments that "Japan is different", there seems no strong reason to believe that Japan could not enjoy again the sort of TFP growth rate it enjoyed in the 1970s and 1980s. Of course, this would require deflation to be banished and macro-economic stability recovered. Indeed, a catch-up to comparable countries' levels could allow a spurt in excess of the long-run average.

Without making unwarranted assumptions about either TFP growth rising to levels not seen in the past or labour input recovering strongly, real GDP growth should be possible at around the 2% rate. Interestingly, this is exactly what Jorgenson and Motohashi concluded when they examined they examined the question (from a different angle) some years ago<sup>6</sup>.

In per capita terms this implies GDP growth of 2.5%. Of course, given the unreliability of demographic estimates the population will not decline at a compound rate of 0.5% and so the per capita growth performance will not appear so good.

But we can comfortably assume that Japan's per capita real GDP growth outlook is no worse than any other major economy.

<sup>6</sup> *Potential Growth of the Japanese and US Economies in the Information Age*, Dale W. Jorgenson and Kazuyuki Motohashi, ESRI Discussion Paper no.88, March 2004

### Debate 3: Growth and stock returns?

**Market's view:** Growth is good for stocks, the more the better

**Our view:** Growth is not the important thing – valuation relative to the opportunity is.

*“... arguments about economic prospects might be interesting, but for stock investors they are almost irrelevant.”*

Thus the FT<sup>7</sup> summarized the latest findings of the London Business School team of Dimson, Marsh and Staunton, as published in the Credit Suisse Global Investment Returns Yearbook, 2010.

The LBS academics examined all the available data (83 markets), and concluded that “99 per cent of the changes in equity returns could be attributed to factors other than changes in GDP”.

A narrower sample of 19 countries for which there is long run data underscored this point revealed a “slightly negative” correlation between real growth in gross domestic product and real equity returns over the long run.

**Growth is not all that it is cracked up to be.** This analysis underscores previous academic findings showing that growth per se to be of only small importance to stocks.

Ritter<sup>8</sup>, though his numbers differ in detail, took this a stage further and found that, in addition, the correlation of real stock returns and real GDP growth per capita was negative.

Perhaps part of the explanation is that the investable market is not the economy. Arnott and Bernstien<sup>9</sup>, in their famous study of the risk premium, noted that in the US real dividend growth has consistently lagged real GDP growth and real GDP growth per capita.

Given the loose relationships that exist between growth and variables of importance to stocks, it seems a very dangerous thing to build a case for equities on real growth alone.

But we live in a nominal world. A recent MSCI Barra<sup>10</sup> study, the results of which are shown in summary in Exhibit 6 and in detail in Exhibit 7, confirms that inflation (or its absence) is the largest single factor operating in recent years on nominal returns. Japan is, of course, aberrant because there has been no inflation.

Exhibit 6

### Sources of Equity Returns, 1975-2009

	World	Japan
Inflation	37.8%	34.6%
Price to Book Growth	13.5%	-15.4%
Real Book Value Growth	18.9%	55.8%
Dividend Income	26.1%	25.0%

Source: MSCI Barra, Morgan Stanley Research

Here “Price to Book Growth” is the change in the level of valuation. The detailed estimates shown in Exhibit 7 show that, while in earlier periods Japan produced equity returns that were comparable with other major markets, it was the shift from a positive revaluation effect to a negative one in the post-1990 period that brought Japan’s 1975-2009 returns down to only half the level of the other markets.

The origin of Japan’s problems is falling valuation when compared with the rest of the world. When we note in addition that it is excesses of inflation or the arrival of deflation (that is, monetary phenomena reflecting policy errors) which tend to reduce market average valuations, we feel it safe to conclude that demography will have next to nothing to do with the longer-term return profile of the Japanese market either in nominal or real terms.

Ultimately we are persuaded by Andrew Smithers analysis<sup>11</sup> that, with stock market returns exhibiting negative serial correlation, low valuation is the key to high long-run returns. He finds Japan likely to have been “*outstandingly cheap*” as of the end of 2008. Topix has risen less than 5% since then.

<sup>7</sup> Financial Times, February 14 2010

<sup>8</sup> *Economic Growth and Equity Returns*, Jay R. Ritter, University of Florida, Nov. 2004

<sup>9</sup> *What Risk Premium is “Normal”?*, Robert D. Arnott and Peter L. Bernstein, Financial Analysts Journal, Mar-Apr 2002

<sup>10</sup> *What drives long-term equity returns?*, MSCI Barra, Jan.2010

<sup>11</sup> *Wall Street Revalued: Imperfect Markets and Inept Central Bankers*, Andrew Smithers, Wiley 2009



Exhibit 7

## Factor Decomposition of Index Returns, 1975-2009

Components of the MSCI World Index gross returns and their volatilities, 1975-2009 and sub-periods						volatility
Period	1975-2009	1975-1979	1980-1989	1990-1999	2000-2009	1975-2009
Gross Index Return (USD)	11.1%	16.0%	19.9%	12.0%	-0.2%	14.9%
Inflation (USD)	4.2%	8.1%	5.1%	2.9%	2.6%	1.3%
Price to Book Growth	1.5%	2.3%	8.0%	5.0%	-8.3%	14.0%
Real Book Value Growth	2.1%	0.2%	2.1%	1.4%	3.8%	5.6%
Dividend Income	2.9%	4.6%	3.6%	2.1%	2.2%	0.4%
Residual Interactions	0.4%	0.7%	1.2%	0.5%	-0.5%	0.3%

Source: MSCI Barra and OECD (inflation data): annualized values. Data as of Sep 30, 2009

Components of regional gross index returns and their volatilities, 1975-2009 and sub-periods						volatility	
Period	1975-2009	1975-1979	1980-1989	1990-1999	2000-2009	1975-2009	
MSCI USA	Gross Index Return (USD)	11.4%	13.3%	17.1%	19.0%	-1.9%	15.4%
	Inflation (USD)	4.2%	8.1%	5.1%	2.9%	2.6%	1.3%
	Price to Book Growth	1.7%	0.7%	6.0%	10.4%	-9.9%	15.6%
	Real Book Value Growth	1.8%	-0.7%	0.6%	2.2%	4.2%	4.5%
	Dividend Income	3.2%	4.8%	4.6%	2.5%	1.8%	0.4%
	Residual Interactions	0.5%	0.4%	0.9%	1.0%	-0.6%	0.4%
MSCI Europe	Gross Index Return (EUR/DEM)	10.7%	11.2%	18.3%	16.1%	-2.0%	16.6%
	Inflation (EUR/DEM)	2.7%	4.1%	2.8%	2.6%	2.1%	1.0%
	Price to Book Growth	2.3%	3.2%	7.9%	8.2%	-9.2%	16.1%
	Real Book Value Growth	1.7%	-1.7%	2.3%	2.0%	2.6%	5.7%
	Dividend Income	3.6%	5.4%	4.2%	2.7%	3.0%	0.6%
	Residual Interactions	0.4%	0.3%	1.0%	0.8%	-0.5%	0.3%
MSCI Japan	Gross Index Return (JPY)	5.2%	13.5%	22.3%	-4.0%	-4.7%	18.3%
	Inflation (JPY)	1.8%	6.6%	2.3%	1.1%	-0.2%	1.9%
	Price to Book Growth	-0.8%	3.6%	9.7%	-6.6%	-6.9%	18.9%
	Real Book Value Growth	2.9%	0.4%	7.7%	0.9%	1.4%	5.2%
	Dividend Income	1.3%	2.4%	1.2%	0.8%	1.3%	0.4%
	Residual Interactions	0.1%	0.5%	1.4%	-0.2%	-0.2%	0.4%
TOPIX	Gross Index Return (JPY)	5.9%	10.3%	20.8%	-2.1%	-3.2%	22.7%
	Inflation (JPY)	1.8%	6.6%	2.3%	1.1%	-0.2%	19.8%
	Price to Book Growth	0.9%	4.2%	10.0%	-3.4%	-5.5%	1.9%
	Real Book Value Growth	2.9%	-0.3%	7.6%	0.2%	2.3%	6.4%
	Dividend Income	1.2%	2.2%	1.2%	0.8%	1.2%	0.6%
	Residual Interactions	-0.9%	-2.3%	-0.3%	-0.9%	-1.1%	1.5%
MSCI Australia	Gross Index Return (AUD)	14.3%	25.8%	17.8%	10.6%	9.1%	18.4%
	Inflation (AUD)	5.5%	11.1%	8.3%	2.3%	3.2%	1.3%
	Price to Book Growth	2.7%	10.5%	1.0%	5.3%	-2.0%	19.6%
	Real Book Value Growth	1.2%	-2.6%	3.2%	-1.2%	3.7%	5.9%
	Dividend Income	4.3%	5.2%	4.4%	4.0%	4.1%	0.6%
	Residual Interactions	0.7%	1.6%	0.9%	0.3%	0.2%	0.8%
MSCI UK	Gross Index Return (GBP)	15.4%	34.6%	23.2%	14.2%	0.8%	19.9%
	Inflation (GBP)	5.4%	15.4%	6.5%	3.1%	1.9%	2.3%
	Price to Book Growth	4.2%	14.6%	8.2%	7.7%	-7.5%	20.4%
	Real Book Value Growth	0.8%	-3.9%	2.1%	-0.4%	3.4%	7.3%
	Dividend Income	4.1%	5.8%	4.8%	3.3%	3.5%	0.5%
	Residual Interactions	0.8%	2.6%	1.7%	0.5%	-0.4%	1.2%

Source: MSCI Barra and OECD (inflation data). AUD inflation is based on Australian Bureau of Statistics data (ABS published quarterly CPI data. We used linear interpolation to generate monthly series. Note that this process also lowers the volatility of the inflation component). Data as of Sep 30, 2009. Note: Topix data calculated by Morgan Stanley Research

## Debate 4: Age structure and the stock market

**Market's view:** Aging Japanese will dis-save, leaving less money for Japanese stocks

**Our view:** There is some evidence that equity multiples move in tandem with the ratio of the middle aged to the young (the MY ratio). The MY ratio will now rise in Japan.

**The shoe could be on the other foot.** Though we are skeptical of the long-run reliability of demographic estimates, we do wish to show that the demographic game can also be played from the other end of the pitch.

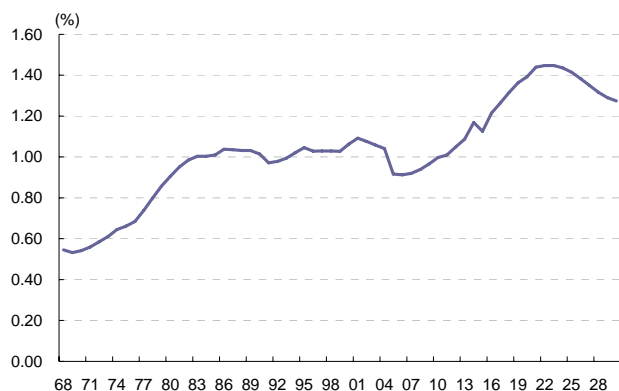
Work by Geanakoplos, Magill and Quinzili<sup>12</sup> has suggested that there is a long-run relationship between the valuation and progress of the stock market and the ratio of the middle-aged to the young.

Their conclusion after examining the past 50 years of demographic and valuation fluctuation in the US was that their analysis “strongly” supported the view that “changes in demographic structure induce significant changes in security prices”.

Exhibit 8 shows our calculation of the MY ratio for Japan based on official population projections. The ratio is the number of people aged between 45 and 54 as a multiple of the number aged between 25 and 34.

Exhibit 8

### Japan's MY ratio to climb – P/Es too?



Source: IPSS, Ministry of Internal Affairs and Communications (Statistics Bureau), Morgan Stanley Research

Quite clearly, the MY ratio is now in an uptrend – which should continue until it reaches a plateau in 2021-2024. The fact that it then declines might not be of overriding concern to the majority of money managers, for whom the prospect of 10 years of a rising Japanese multiple might be more important.

It is worth noting that not only is the MY ratio for America in medium term decline but it has been and remains structurally lower than in Japan.

Regression analysis of the actual US multiple and the US MY ratio would suggest that at its current level the Japanese MY ratio would not be inconsistent with a market multiple of around 16 times. By coincidence this is exactly where we place the market multiple (Topix basis) on 2011 earnings.

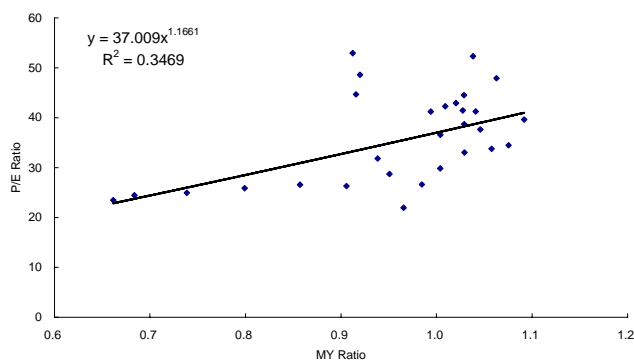
The rise in the Japanese MY ratio towards 2031 would allow – if the same relationships held as in the US – for the market multiple to expand towards around 27 times.

The band of fluctuation around the model predicted P/E seems to have been around 7 multiple points in the US case. This would imply a low end multiple range for Japan in 2021-2024 of 20 times and a high end of 34 times.

We have looked at the historical relationship between the Japanese MY ratio and the Japanese market multiple (shown in Exhibit 9 since 1968 (the longest time frame for which we have reliable valuation data).

Exhibit 9

### Japan's MY ratio and P/E – a weak but perhaps intriguing relationship



Note: The "Bubble" years 1988-1992 have been removed from this calculation.  
Source: IPSS, Ministry of Internal Affairs and Communications (Statistics Bureau), Datastream, Bloomberg, Morgan Stanley Research

<sup>12</sup> *Demography and the Long-run Predictability of the Stock Market.* John Geanakoplos, Michael Magill, and Martine Quinzili; August 2002, Revised: April 2004. Cowles Foundation Discussion Paper No. 1380

Clearly Japan's experience is rather different from the US given the scale of the Japanese bubble and the length of time over which it inflated. While there is a suggestive coincidence of the peak in the MY ratio and the peak of the market in the 1980s and again in 2000, followed by a decline to the recent bottom, simple correlation fails to establish much of a relationship between the two series.

Based on the results shown in Exhibit 9, one would be forced to conclude that with the MY ratio at 1.4 as it will be in 2021, the historically justified could be as high as 69x, with a range of 54x to 84x.

Naturally, we hesitate to place too much faith in such constructions, both because the R2 is less than 0.4 and because of the inherent unreliability of such simplistic techniques.

Yet we do wish to emphasise that "demographic analysis" is not a one-way street. In particular, there seems some support for the minimalist view that the demographic factors that may have been encouraging a decline in the market multiple in the recent past have switched to protecting the market multiple in future. Perhaps one might go further and suggest that demographic change poses no obstacle to future bubbles in Japanese equities.

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<b>Underweight/Sell</b>	<b>382</b>	<b>15%</b>	<b>89</b>	<b>12%</b>	<b>23%</b>
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