



2015/2016

Report On The Management Of The Government's
Portfolio For The Year 2015/16

WHO WE ARE

GIC is a leading global investment firm with well over US\$100 billion in assets under management.

Established in 1981 to secure the financial future of Singapore, the firm manages Singapore's foreign reserves. A disciplined long-term value investor, GIC is uniquely positioned for investments across a wide range of asset classes, including real estate, private equity, equities and fixed income. GIC employs more than 1,300 people across offices in Singapore, Beijing, London, Mumbai, New York, San Francisco, São Paulo, Seoul, Shanghai and Tokyo.

For more information, please visit

www.gic.com.sg

The year in numbers

4.0%

Annualized rolling
20-year real rate
of return

35

Years since
GIC was
incorporated

1,300+

Total number
of staff
in GIC

2015/16 HIGHLIGHTS



Performance

GIC achieved a 20-year annualised rate of return of 4.0% above global inflation for the financial year ended 31 March 2016.

High valuations, together with limited improvement in the outlook for economic growth and earnings globally, mean lower returns are to be expected over the next decade.



Appointments

Mr Koh Boon Hwee was appointed member of the GIC Investment Board with effect from 15 January 2016.

Seven new senior leadership appointments took effect from 1 June 2016 –

- Mr Lim Chow Kiat as Deputy Group President, while concurrently Group Chief Investment Officer.
- Dr Jeffrey Jaensubhakij as Deputy Group Chief Investment Officer, while concurrently President, Public Markets.
- Mr Ang Eng Seng as Chief Investment Officer for Infrastructure, while continuing concurrently as President (Europe).
- Mr Choo Yong Cheen as Chief Investment Officer for Private Equity.
- Mr Lee Kok Sun as Chief Investment Officer for Real Estate.
- Ms Liew Tzu Mi as Chief Investment Officer for Fixed Income.
- Mr Bryan Yeo as Chief Investment Officer for Public Equities.



Outlook

Looking forward, we expect a difficult investment environment with modest growth prospects, greater uncertainty and a high degree of volatility in the macro economy and markets.

The long-term 20-year returns in the coming years are likely to be significantly lower than seen since 1980. Nonetheless, our investment philosophy, governance framework, organizational capabilities and market network, all carefully developed over the last 35 years, leave us well-placed to invest in this new environment.

THE GIC PRIMER

Our responsibility is to preserve and enhance Singapore's foreign reserves. People and talent are central to what we can do. We believe that the results we seek are best achieved through a culture founded on our five PRIME values of Prudence, Respect, Integrity, Merit and Excellence.



PRUDENCE

We exercise prudence and sound judgement and take a considered approach to managing risks as we seek to deliver sustainable, superior investment returns, always conscious of our overriding fiduciary responsibility.

As an institution and as individuals, we conduct ourselves with good sense and circumspection, even as we take the best advantage of our large asset base, global presence, multi-asset approach and long-term orientation.



RESPECT

All of us are united in a common endeavour, regardless of who we are, where we work or what we do. We respect people as individuals, care for their well-being, and welcome diversity in capability and background. We do not tolerate behaviour that works against the interest of our clients or of GIC.

We stress teamwork within and across departments, and with our clients and business partners. We expect everyone to be free, candid and constructive in their comments and suggestions, and always seek to help our colleagues and GIC do better.



INTEGRITY

Everything we do is founded on integrity. We expect the highest standards of honesty from everyone in GIC, both in our work and in our personal lives. This includes abiding by the laws of the countries we invest in, and observing our code of ethics in letter and in spirit.

We must never jeopardise the trust others have in us and in our reputation for professionalism.



MERIT

We recruit and develop our people solely on merit. We draw our talent from around the world and provide challenging and meaningful work. We grant recognition and reward based on performance and conduct consistent with our PRIME values. We develop our people to achieve their potential so that we may also perform to our potential.

We select business partners based on their capability. We believe in long-term relationships built upon high levels of performance and quality of service.



EXCELLENCE

We are relentless in our pursuit of excellence. In all that we do, we strive to be the best that we can be. This demands that we plan and anticipate well, so that we will always be in time for the future, fully able to take up the challenges and opportunities that come, pursuing improvements where they may be found, and economies where these may be gained.

We expect everyone to do his best in every situation. We harness the creativity and imagination of our people and our business partners for sustainable, superior results.

THE GIC WAY

The GIC Way is a set of principles that defines the way we think and act. It sharpens our focus on our client, our commitment to people and our future. The PRIME Values act as our compass – having a good compass enables us to get back to our fundamental purpose and beliefs, especially when we are faced with situations we have not come across before.



CLIENTS FIRST

- When our clients do well, we do well
- Never compromise our PRIME values and reputation; not even for better returns
- Always follow GIC's investment principles (5Ps):
 - Pursue intrinsic value and maintain price discipline
 - Practise long-term investing
 - Pick our spots: be focused and leverage our strengths
 - Pay attention to risk control
 - Prepare for the future



PEOPLE – THE KEY

- Do what's right, not what's easy
- Help GIC make the best decisions. Speak up if you have a different view
- Attract exceptional people and develop them to their full potential
- Embolden innovation and encourage learning
- Reward what matters: contribution; not pedigree, age, gender or nationality
- Excel in what you do; make a difference
- Empower decision-making at every level
- Work seamlessly across boundaries and hierarchy – OneGIC



FUTURE NOW

- Tomorrow is determined today
- Build leadership and resources for the future
- Insist on nimble and responsive structures and processes

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OVERVIEW FROM GROUP PRESIDENT & GROUP CHIEF INVESTMENT OFFICER

We are 35 this year. Still young.

But in the Singapore context the anniversary is significant, particularly as it comes so soon after celebrating 50 years as a nation – a landmark that has sparked a major retrospection on what has driven our country's extraordinary rise. Since 1981, GIC has played an integral part in the success of Singapore through the management of the nation's foreign reserves.





Welcome

We welcome Mr Koh Boon Hwee who joined us on 15 January this year as the newest member of the GIC Investment Board. Mr Koh is the Executive Chairman of Credence Partners Pte Ltd and a distinguished corporate leader who has investment experience especially in technology and venture capital.

Further, the investment returns of GIC, together with that of the Monetary Authority of Singapore and Temasek Holdings, have contributed to the Singapore Government's Budget through the framework set out in the Singapore Constitution.

Through the continual review of how we organize ourselves, respond to changes in the investment environment and develop our capabilities, we aim to fulfill our mandate to preserve and enhance the reserves that benefit the present and future generations of Singaporeans.

GIC achieved a 20-year annualised rate of return of 4.0% above global inflation for the financial year ended 31 March 2016.

Given the strong performance across major asset classes in the past five years, valuations are high. This, together with limited improvement in the outlook for economic growth and earnings across the world, portends lower expected returns over the next decade. The path will also be volatile, as policymakers in the many large economies embark on the difficult task of steering their unprecedented policy measures with unpredictable outcomes. Changes in market structure such as high frequency trading and a tighter regulatory framework constraining banks' balance sheets and impacting market liquidity, could further amplify market moves. We remain cautious in our outlook but believe that staying with our long-term investment approach will allow us to take advantage of attractive opportunities from such challenging situations.

Our globally diversified portfolio is positioned to withstand short-term market volatility, yet still reap strong returns over the long term. Our long-term orientation also means that the GIC Portfolio has to be significantly different from a portfolio of global equities and global fixed income market indices. This implies that our investment performance cannot be expected to surpass the global market indices every year or even every 5 or 10 years. What is critical is that the GIC Portfolio will produce positive real returns and surpass the global indices over the longer term.

We recognise the important role of culture in a successful organization and have worked hard to develop ours. We emphasise prudence, discipline and the pursuit of excellence, trusting our staff to execute their work to the highest standards with the highest integrity and to strive always to be the best that they can be. Culture needs to start at the top. Leadership in GIC is about asking a key question: How can I help you do your job better? This is premised on the belief that by focusing on others, not on ourselves as individuals, we will build a strong sense of self-confidence to do things right and to do things differently from others if our convictions move us to do so.

“We need to learn well - it is the wisdom of hindsight. We need to think well - it is the wisdom of insight. We need to see well - it is the wisdom of foresight.”

LIM SIONG GUAN
Group President

Developing organizational leadership is a continuous challenge to spot talent as early as possible, and to develop talent with suitable exposure and challenging assignments. With new leadership appointments, effective 1 June 2016, GIC positions itself for continuing success in an ever changing investment environment.

We thank generations of GIC staff who have collectively steered the organization and contributed to our mission to secure the financial future of Singapore. We will continue to adapt our investment processes and operations, and develop our people to meet the future challenges as we strive to invest well for the nation.

In these volatile times, we continually learn from others and at the same time do our part in sharing knowledge with others. A particular example is the International Forum of Sovereign Wealth Funds (IFSWF). We are one of the early architects of the Santiago Principles. GIC continues to play an active role in promoting these principles and explaining the value SWFs bring to the investment community. We are pleased to announce the appointment of Ms Deanna Ong, Company Secretary and Managing Director of GIC, to the IFSWF Board on 1 October 2015.

At GIC, our work becomes tougher as the world we face becomes more complex and volatile. The skills and expertise required to be successful today are different from those needed 35 years ago, and will change again in the future.

We need to learn well - it is the wisdom of hindsight. We need to think well - it is the wisdom of insight. We need to see well - it is the wisdom of foresight.

Senior leadership appointments to strengthen investment capacity

On 1 June 2016, new appointments took effect:

- Mr Lim Chow Kiat as Deputy Group President, while concurrently Group Chief Investment Officer.
- Dr Jeffrey Jaensubhakij as Deputy Group Chief Investment Officer, while concurrently President, Public Markets.
- Mr Ang Eng Seng as Chief Investment Officer for Infrastructure, while continuing concurrently as President (Europe).
- Mr Choo Yong Cheen as Chief Investment Officer for Private Equity.
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LIM SIONG GUAN
Group President



LIM CHOW KIAT
Deputy Group President
Group Chief Investment Officer

INVESTMENT REPORT

GIC's mandate is to achieve good long-term returns. The primary metric for evaluating GIC's investment performance is the rolling 20-year real rate of return. The goal is expressed in real terms because GIC must, at a minimum, beat global inflation and preserve the international purchasing power of the reserves placed under its management.

4.0%

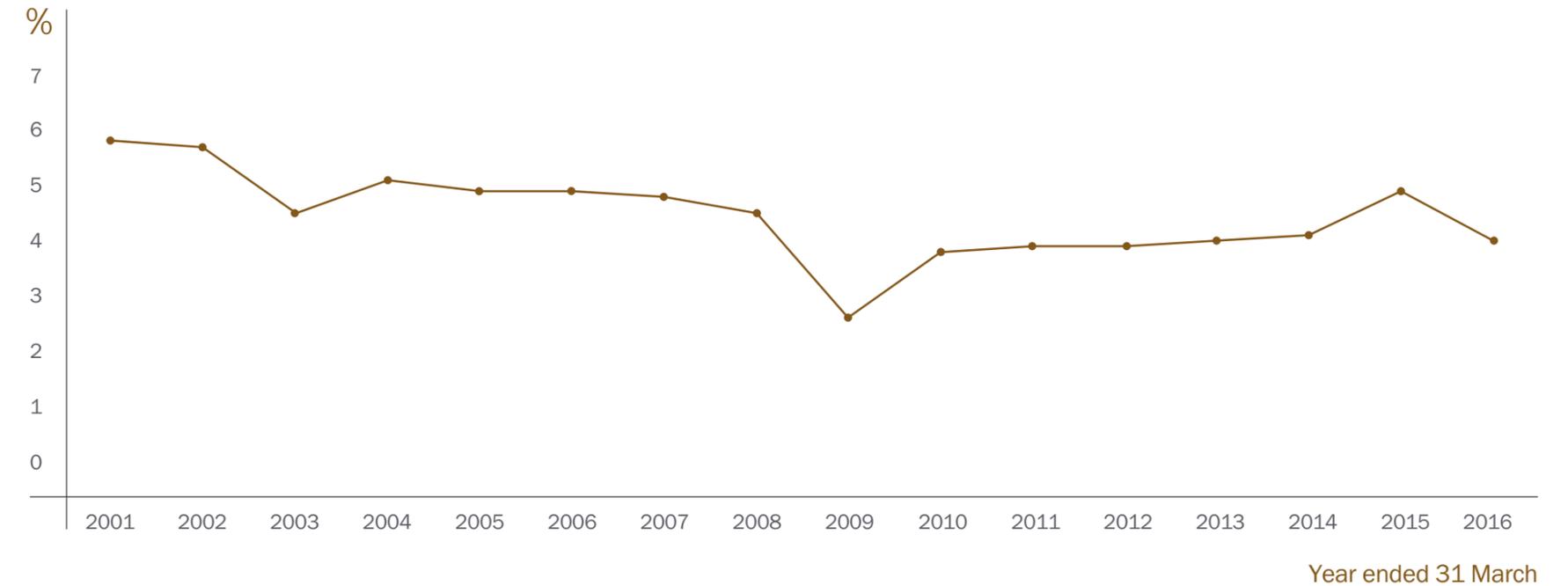
Over the 20-year period that ended 31 March 2016, the GIC Portfolio generated an annualised real return of 4.0% above global inflation.

Long-Term Investment Performance

GIC's mandate is to achieve good long-term returns. The primary metric for evaluating GIC's investment performance is the rolling 20-year real rate of return. The goal is expressed in real terms because GIC must, at a minimum, beat global inflation and preserve the international purchasing power of the reserves placed under its management.

Over the 20-year period that ended 31 March 2016, the GIC Portfolio generated an annualised real¹ return of 4.0% (Figure 1) above global inflation. In nominal USD² terms, the portfolio generated an annualised return of 5.7% over the 20 years that ended 31 March 2016. This means that US\$100 invested with GIC in 1996 would have grown to US\$303 today.

Figure 1: Annualised Rolling 20-Year Real Rate of Return of the GIC Portfolio since 2001



¹ The real return number is independent of the currency used to compute it.

² The nominal rates of return have been reported in USD terms since our 2009 report as the USD is the most common currency base for publishing global investment returns.

UNDERSTANDING THE 20-YEAR ROLLING RETURNS

GIC reports its performance as an annualised 20-year real return, which is the average time weighted portfolio return over that period. It is a rolling return, which means that last year's 20-year return covers the returns from 1996 to 2015, this year's 20-year return covers 1997 to 2016, and next year's return will cover 1998 to 2017. For each new year added, the earliest year is dropped out. The change in the rolling 20-year return from year to year is therefore determined by what is dropped from the earliest year and what is added for the latest year (see Figure 2).

Figure 2: Illustration of a portfolio's 20-year rolling real return



As an illustration of how the 20-year rolling return is affected by years being added and dropped as the window moves, consider the nominal returns of MSCI World Index. Global equities enjoyed high returns in the second half of the 1990s leading up to the tech bubble in the early 2000s, but low returns in the past two years following the Global Financial Crisis in 2008-2009. Consequently, the 20-year rolling return for global equities has been declining as shown in Figure 3.

This works in the other direction as well. When the years with unusually low returns such as in the Global Financial Crisis drop out, we would expect the rolling return to improve if the new years that are added have higher returns.

Figure 3: Nominal Returns of MSCI World index (Global Equities) since 1976



A long-term investment approach allows GIC to be contrarian in the face of short-term market movement and so reap higher long-term returns.

Long-Term Investment Approach for Long-Term Performance

A long-term investment approach offers several advantages. It allows GIC to be contrarian in the face of short-term market movement and so reap higher long-term returns. For example, during market downturns, our active strategy teams are able to capitalize on our extensive networks, internal capabilities, collaboration and deal execution abilities to seize idiosyncratic investment opportunities with the potential for attractive returns. The illiquid and long-term nature of private equity and real estate investments also allows GIC to extract returns for bearing the illiquidity risk.

GIC's long-term performance reflects three main factors. First, the dynamics of the global economy. Second, the performance of various asset classes, which we capture via our asset allocation strategy. Third, the performance of skill-based strategies undertaken by the various active strategy investment teams. The GIC Portfolio's returns are largely driven by the first and second factors, which are captured by the Policy Portfolio. To supplement these returns, we add on the third factor – active strategies, which seek to outperform the Policy Portfolio by investing differently from the market benchmarks. Based on the risk parameters set by the client, we strive to optimise the GIC Portfolio to achieve the best possible long-term returns for a variety of economic scenarios. Our investment approach, including the investment framework implemented in 2013, is elaborated in the chapter on 'Managing the Portfolio'.

GIC's long-term performance reflects the three factors



Mitigating The Risk of Large Losses

Investors traditionally have regarded risk as the volatility (or standard deviation) of a portfolio's returns due to fluctuations in market variables like asset prices, interest rates and exchange rates. While volatility is important, it does not adequately capture the risk of large losses. While small profits and losses typically reflect short-term swings in market sentiment, large losses may mean fundamental changes that could inflict long-term impairment to the portfolio.

The risk of large losses is often associated with market crashes. For instance, a portfolio consisting of 65% global equities and 35% global bonds would have experienced large losses over the short to medium terms during periods of market stress such as the Global Financial Crisis.

GIC maintains a diversified portfolio that is robust across a whole range of scenarios; taking on higher risks must be justified by higher expected returns. Through forward-looking risk analyses (involving stress-testing and scenario analyses), GIC's portfolio is managed to maximize expected return, while minimizing the likelihood of large losses that may lead to permanent impairment. GIC's long-term focus and contrarian investment approach – buying when most investors are selling due to their short-term concerns; and selling when most investors are buying again due to their short-term perspectives – allow us to look beyond the immediate short-term risks, and focus instead on the investments' long-term return potential.

The GIC Portfolio

Each asset class carries a different risk profile. Growth assets such as equities generate higher returns, but also come with higher risk. Defensive assets such as sovereign bonds offer lower returns, but have lower risk and protect the portfolio in market downturns. Because the future is uncertain, the GIC Portfolio is constructed to be resilient across a broad range of plausible economic conditions, and still reap good long-term real returns. The GIC Portfolio is made up of a diversified range of asset classes, to benefit from the way different assets respond to possible market and economic conditions.

Table 1 and Figure 4 show the asset mix and geographical distribution of the GIC Portfolio as of 31 March 2016.

Table 1: Asset Mix of the GIC Portfolio

Asset Mix	31 March 2016 (%)	31 March 2015 (%)
Developed Market Equities	26	29
Emerging Market Equities	19	18
Nominal Bonds and Cash	34	32
Inflation-Linked Bonds	5	5
Real Estate	7	7
Private Equity	9	9
Total	100	100

In the current state of the world economy, the task of diversifying has become harder as different financial assets have become more closely correlated. We nonetheless believe that a diversified asset mix puts us in better stead to benefit from changing market cycles.

Figure 4: Geographical Distribution of the GIC Portfolio as of 31 March 2016



Intermediate and Long-Term Investment Performance

The GIC Portfolio is constructed to deliver good long-term real returns. It is expected to perform better than the Reference Portfolio over the long-term, but it may underperform over shorter periods. GIC focuses on the long-term 20-year real return. The shorter 5-year and 10-year real returns are reported as intermediate markers, not as performance measures.

Table 2 shows the performance of the GIC Portfolio alongside the Reference Portfolio³ and looks at investment returns in the context of risk as defined by annualised volatility.

GIC's 20-year nominal return was 5.7% per annum in USD terms, while that of the Reference Portfolio was 6.0%. This reflected the lower risk-orientation of the GIC Portfolio during the early years of the period, with as much as 30% in cash until the end of 1990s, resulting in lower returns than the Reference Portfolio. GIC's lower risk profile over the 20 year period as a whole is indicated by the lower volatility of the portfolio at 9.2%, while that of the Reference Portfolio was 11.0%.

The GIC Portfolio returned 5.0% per annum in USD nominal terms over the 10-year horizon, while the Reference Portfolio returned 4.8%. In the last decade, GIC significantly increased its exposure to alternative asset classes such as real estate and private equity. In addition from July 2007 to September 2008, we reduced our public equities exposure by more than 10%, as we were concerned that equities had become overvalued in the euphoric market environment of early 2007. This contributed to the performance of the GIC Portfolio.

Table 2: Performance and Volatility of the GIC Portfolio and Reference Portfolio

Time period	Annualised nominal return ⁴ (USD) for period ended 31 March 2016		Annualised volatility for period ended 31 March 2016	
	GIC Portfolio	Reference Portfolio	GIC Portfolio	Reference Portfolio
20-Year	5.7%	6.0%	9.2%	11.0%
10-Year	5.0%	4.8%	10.2%	12.1%
5-Year	3.7%	4.6%	8.2%	9.6%

Over the last 5-year period, the GIC Portfolio returned 3.7% per annum in USD nominal terms, lower than the Reference Portfolio. In the last 5 years, developed market equities, especially those in the US, have done particularly well. The GIC Portfolio held less developed market equities, hence had lower returns than the Reference Portfolio over the 5-year period.

GIC invests for the long term. To generate good real returns over the long term, we have to be prepared for short-term underperformance relative to the market indices, even for several years at a stretch. For instance, we have more emerging market equities than the Reference Portfolio because we have assessed that emerging market equities will benefit

from the sustained structural improvements in these economies, and contribute positively to the long-term real returns of the GIC Portfolio. We have maintained this assessment even though emerging market equities have underperformed developed market equities in recent years.

³ The Reference Portfolio was adopted from 1 April 2013, and reflects the risk that the Government is prepared for GIC to take in its long-term investment strategies. It comprises 65% global equities and 35% global bonds. For more details, please refer to the chapter on 'Managing the Portfolio'.

⁴ The GIC Portfolio rates of return are computed on a time-weighted basis, net of costs and fees incurred in the management of the portfolio. However, the Reference Portfolio rates of return are provided on a gross basis, i.e. without adjustment for costs and fees.

What is most important for GIC is to continue generating a good real return over the long term, and to do so with due attention to risk and opportunity.

Expectations for Coming Years

Prospects for returns on assets are not as good as what we saw from the 1980s to the 2000s. We expect real returns for both the GIC Portfolio and Reference Portfolio to be lower, due to the all-time low interest rates, modest global growth prospects and high valuations of financial assets.

Complicating the prospects for returns is a more uncertain outlook for economic growth. High debt levels in both developed and emerging countries weigh on growth and undermine the effectiveness of macroeconomic policies. Other risks to the growth outlook include rising income inequality, populism, geopolitical tensions and the potential negative impact of disruptive technologies. Rising populism could generate more protectionist policies. Public sentiment against globalization and foreign investors could grow and affect global investors like GIC. Technological change has been accelerating, but it is not clear if and when it will translate to significantly higher

productivity growth in the economy, and whether it will cause serious structural unemployment. Technological progress poses both risks and opportunities for investors. On the one hand, disruptive technologies can hurt existing investments, but on the other hand, new companies and opportunities will rise with innovation.

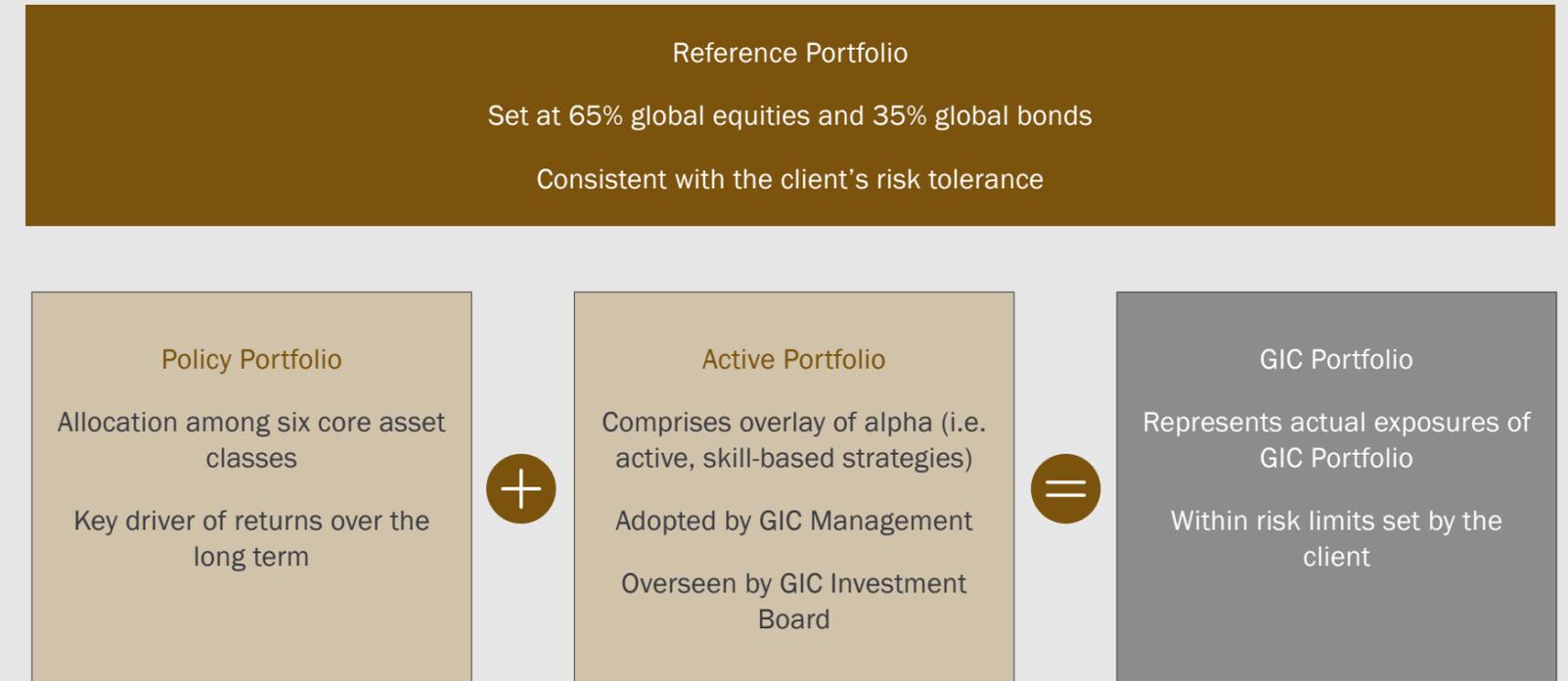
A more difficult macro environment will separate investors with the skills and network to find attractive bottom-up investment opportunities, from those who do not. GIC continues to build on our extensive range of capabilities and network of business partners, enhance our investment and risk management processes as well as look for new ways to get the most out of our knowledge and data resources. What is most important for GIC is to continue generating a good real return over the long term, while paying due attention to risk and opportunity.

MANAGING THE PORTFOLIO

GIC's investment strategy is to build a portfolio comprising asset classes that generate good real returns over the long term, while adhering to the risk tolerance outlined by our client.

Our investment framework enables GIC to face an increasingly challenging and complex investment environment. It capitalises on GIC's strengths, including our governance structure and our ability to take a long-term investment perspective.

GIC's Investment Framework



GIC's disciplined approach to rebalancing our long-term asset mix ensures we keep to the allocated ranges of asset classes in the Policy Portfolio.

Our Starting Point

Our client, the Singapore Government, owns the funds GIC manages and sets its risk tolerance. GIC constructs the portfolio to generate good long-term returns while adhering to the risk tolerance of our client.

How We Build the Portfolio

Establishing the client's Risk Limits

The Reference Portfolio characterises the risk the Government is prepared for GIC to take in its long-term investment strategies. It comprises 65% global equities and 35% global bonds.

Importantly, the Reference Portfolio is not a short-term benchmark for GIC. GIC's investment strategy is not to track the Reference Portfolio, but to build a portfolio comprising asset classes that generate good real returns over the long term, while adhering to the risk tolerance outlined by our client.

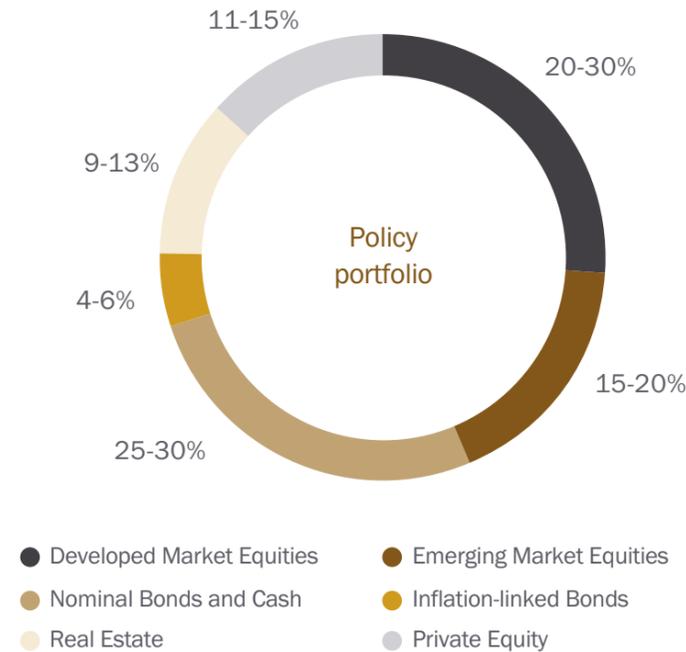
This approach necessarily gives rise to deviations between the GIC Portfolio and the Reference Portfolio and can result in significant differences in performance from time to time.

We are confident about the long-term performance of the GIC Portfolio and do not construct it with the aim of outperforming the Reference Portfolio over short periods.

The Policy Portfolio: Key Investment Driver

The Policy Portfolio represents GIC's asset allocation strategy over the long term. It forms the bulk of the risk and return potential of the GIC Portfolio. The Policy Portfolio aims to balance the way different asset classes respond to different possible economic environments.

There are six asset classes in the Policy Portfolio: Developed Market Equities, Emerging Market Equities, Nominal Bonds and Cash, Inflation-linked Bonds, Private Equity and Real Estate.



Through the different mix of asset classes, the Policy Portfolio is expected to achieve better returns than the Reference Portfolio over a 20-year period. This can sometimes result in short-term underperformance relative to the Reference Portfolio.

The long-term investment horizon of the Policy Portfolio means that it is not intended to be adjusted frequently or in response to market cycles. GIC has a facility to adjust its asset allocation over the medium term in response to fundamental changes in the global investment environment. An example of such a change is a structural shift in the risk and return profile of a particular asset class or geographical region.

GIC's disciplined approach to rebalancing our long-term asset mix ensures we keep to the allocated ranges of asset classes in the Policy Portfolio.

Disciplined Rebalancing

Rebalancing involves systematically buying more assets that have fallen in price and selling some assets that have risen in price, to keep the asset composition in our portfolio steady over time. When an asset class such as equities does particularly well, the rebalancing rule compels investors to sell. Conversely, when equities do particularly poorly, such as after a crash, rebalancing calls for increasing holdings of the assets that have fallen in price. Studies have shown that in the long run, a portfolio that is rebalanced regularly to its predefined target allocations tends to outperform a portfolio whose allocations are allowed to drift.

GIC's investment strategy is to build a portfolio comprising asset classes that generate good real returns over the long term, while adhering to the risk tolerance outlined by our client.

The Active Portfolio: Skill-based Strategies

The Active Portfolio includes an overlay of investment strategies in which managers add value to the Policy Portfolio, while broadly maintaining the same level of systematic risk. "Alpha" is the additional return achieved by the active strategies as compared to the Policy Portfolio.

Each active strategy must generate a return above its cost of capital and is funded through the sale of an asset class or combination of asset classes in the Policy Portfolio with a similar systematic risk exposure. For example, active strategies designed to outperform public equities are funded from public equity holdings in the Policy Portfolio. This way, passive investments in the Policy Portfolio are replaced by an active strategy with the potential for greater returns without additional systematic risk to the portfolio.

"Alpha" & Beta

The return of any portfolio can be explained by its Alpha and Beta, as commonly defined in finance literature. Beta is the portion of the return that can be attributed to market returns, while alpha is the excess return above the market.

At GIC, we separate active, skill-based "alpha" strategies from beta activities to enable a greater understanding and consequently management of the drivers of our portfolio return and risk. Our focus for beta activities is to achieve cost and operational efficiencies. For alpha, our focus is to earn return from our institutional advantages, skills and efforts.

The GIC Board establishes an overall risk budget which GIC Management can use for its active strategies. These strategies are stress-tested to understand and quantify their performance under various extreme but plausible market conditions, including macroeconomic and geopolitical events.

Active Risk Budget

The active risk budget sets the total level of risk for the Active Portfolio. GIC Management employs risk budgeting to allocate risk to different strategies.

Governance of the Investment Framework

The investment framework clearly defines the different risk and return drivers for GIC in the long run, and further clarifies the responsibilities of the GIC Board and Management. The Reference Portfolio is consistent with the Singapore Government's risk appetite, while the GIC Board approves the Policy Portfolio which is expected to deliver good sustainable returns over the long term. GIC Management is given the discretion to add value within the risk limits set by the GIC Board through the Active Portfolio which comprises active, skill-based strategies.

The Investment Board (IB) provides additional and independent oversight on GIC's active investment management and process. It comprises individuals drawn from the private sector, some of whom are not members of the GIC Board. They collectively bring a wealth of experience in different types of investments in a range of geographies. A critical role of the IB is to ensure that GIC invests in a sound and disciplined manner. Additionally, the IB ensures that GIC does not take on undue reputational risk in our pursuit of good investment opportunities. GIC inevitably has significant positions in various companies. Special attention will be paid to such large investments.

The following table summarises the responsibilities within GIC under the investment framework. Taken as a whole, our investment framework capitalises on GIC's strengths. These include the ability to take a long-term investment perspective; capabilities in public and private markets and the potential to synergise these to invest in cross-asset opportunities; presence in all major geographies; a skilled and experienced talent pool; and a governance structure that clearly distinguishes the responsibilities of the GIC Board and Management.

Responsibilities within GIC under the investment framework

	Responsibility
GIC Board	<ul style="list-style-type: none"> Approves Policy Portfolio and active risk budget
Investment Strategies Committee	<ul style="list-style-type: none"> Reviews GIC Management's recommendations on the Policy Portfolio and active risk budget
Investment Board	<ul style="list-style-type: none"> Oversees GIC Management's active strategies and large investments Ensures GIC does not take on undue reputational risk in pursuit of good returns
GIC Management	<ul style="list-style-type: none"> Recommends the Policy Portfolio and constructs the Active Portfolio Has discretion to add value through the Active Portfolio within the risk tolerance in GIC's mandate set by the client
Investment Teams	<ul style="list-style-type: none"> Implement Policy Portfolio and conduct active strategies

At the heart of GIC's investment philosophy is a disciplined approach to long-term value investing.

Investment Philosophy

At the heart of GIC's investment philosophy is a disciplined approach to long-term value investing. We seek opportunities where there is a clear difference between the current price and the intrinsic value of an asset.

Long-Term Value Investing

GIC's long-term value investing approach is underpinned by our ability to distinguish price from value. An asset's price is driven mostly by cyclical market sentiments, while its value is its fundamental worth. Anchored by this perspective, we endeavour to assess the value well and keep to the price discipline, even if it sometimes means going against market sentiments.

We consider the drivers of risk and return for each asset class to establish where true fundamental value lies. This approach comprises both top-down and bottom-up analyses for all investments. In top-down analysis, we review the country's macroeconomics, politics, currency and corporate governance culture; sector fundamentals such as industry structure, drivers and trends. This top-down approach is similar for public and private markets' asset classes, while bottom-up analyses are more varied.

For example, in public equities, the bottom-up analysis focuses on the stock's fundamentals, such as business model, competitive strengths, balance sheet, profitability and management, while valuation is based on factors such as pricing ratios, yields and cash flows. In real estate, the teams conduct bottom-up analysis based on property-specific factors such as location, building quality, tenant mix, lease expiry profiles and income stream outlook. Our long-term value investing mindset is the common thread.

Long-term investing is not a rigid buy-and-hold approach over long periods. The holding period is driven by the movements in the price and value of an asset. It is not necessarily a function of time, although it usually takes some time for price to reflect value. Translating this philosophy into practice requires constant and concerted effort.

Factors such as track records, strength of management teams and sustainable business theses are included in our risk analyses. We are also an active advocate of long-term investing, as seen in our participation in initiatives such as the "Focusing Capital on the Long Term" initiative and other efforts.

Implementation

Our core investment groups underpin the investment organization at GIC: Public Equity, Fixed Income, Private Equity & Infrastructure, and Real Estate. In addition, our Integrated Strategies Group evaluates and invests in cross-asset investment opportunities. We separate active skill-based "alpha" strategies from beta activities at GIC to enable greater effectiveness and efficiency. Our focus for beta activities is to achieve cost and operational efficiencies. For alpha, our focus includes enhancing collaboration to tap GIC-wide expertise to access investment opportunities and execute major investments which are not straightforward in their construction.

We are open to investing in all countries outside of Singapore, but do not invest in countries that are subject to United Nations Security Council sanctions. We exercise ownership rights in our investments to protect the financial interest of our client.



Case Study: Focusing Capital on the Long Term (FCLT)

GIC is an advisory board member of the FCLT initiative, which comprises a diverse group of more than 20 global leaders who represent major institutional investors and corporations. FCLT was established in 2013 to develop practical structures, approaches, and ideas to advocate a longer term mindset amongst businesses and investors. GIC is a key contributor to various FCLT initiatives including *Perspectives on the Long Term* where we presented GIC's view on ways to change the current system to reinforce long-term practices. Our contributions to FCLT's *Long-Term Portfolio Guide* to encourage institutional investors to invest for the long term was awarded Best Investment Paper 2015 at The Savvy Investor Awards. The Awards recognise the best pensions and investment white papers of 2015. GIC was advocating, through FCLT, for more to be done to incorporate a longer-term orientation in the design and utilisation of benchmarks. The creation of long-term benchmarks, like the S&P Long-Term Value Creation Global Index launched in January 2016, was a key recommendation by FCLT to encourage fund managers to allocate capital to companies focused on creating long-term value.

We manage a well-diversified portfolio to produce sustained, superior risk-adjusted performance.

Investment Groups in Public and Private Markets

GIC invests in both public and private markets. In public markets, we invest in public equity in both developed and emerging markets, absolute return strategies (hedge funds), fixed income, cash and currencies. We manage a well-diversified portfolio to produce sustained, superior risk-adjusted performance. In private markets, our allocation to alternative asset classes stems from their potential to generate high long-term real returns and their role to diversify the portfolio. Real estate assets, in particular, also serve as a hedge against inflation. GIC's long investment horizon puts us in a good position to exploit market inefficiencies through the active management of these assets.

Public Equity Group

GIC pursues active management strategies in equity investing. We have an established team of in-house research analysts and experienced portfolio managers. They conduct in-depth due diligence and research that enable us to identify undervalued stocks with the potential to generate good returns over the long term. Our investment professionals have a wide network of corporate and industry contacts with diverse insights on companies in the investment universe.

Fixed Income Group

Fixed income investments aim to generate steady returns, provide a liquidity reserve to support portfolio management activities, and enhance capital preservation through diversification. Our portfolio managers employ a range of investment strategies in managing fixed income investments including yield curve analysis, credit, interest rate duration and currency management to add value to the portfolio.

Private Equity & Infrastructure Group

GIC's private equity universe includes buyouts, venture capital and special situations such as mezzanine debt, distressed debt and secondary fund investments. We invest in companies directly and through funds. The direct investment programme is focused on taking minority equity positions and providing mezzanine financing in buyouts. Our funds strategy aims to identify and invest with leading private equity and venture capital funds globally, and grow with them in the long run. We have built up a network of over 100 active fund managers. The investment teams add value to the boards and management of the investee companies by providing advice and access to a global network of business links.

In Infrastructure, GIC's primary strategy is to invest directly in operating infrastructure assets with a high degree of cash flow visibility and which provide a hedge against inflation. These include mature, low-to moderate-risk assets in developed markets, complemented by investments with higher growth potential in emerging markets.

Real Estate Group

GIC is an early entrant among institutional investors in real estate. Investments include traditional private real estate (brick-and-mortar assets), public equities (such as real estate operating companies), real estate investment trusts and real estate-related debt instruments. The real estate assets span multiple property sectors, including office, retail, residential, industrial and hospitality.

Real estate investing is pursued through a rigorous investment analysis, underwriting and approval process to ensure the portfolio meets both investment and risk objectives. Asset-specific conditions and risk are among the factors that influence investment decisions. GIC actively manages the assets to generate income and enhance market value through tenant management, market positioning, leasing and capital improvements. In this team-based approach, an appropriate range of real estate and capital market skills is applied to each investment.

Integrated Strategies Group

The Integrated Strategies Group (ISG) aims to enhance our alpha-generating capability and capacity by approaching cross-asset investment opportunities from a GIC-wide perspective. Through supplementing efforts by the business groups and leveraging GIC's competitive advantages, ISG oversees a more flexible and collaborative investment approach across product types, public and private markets, as well as capital structure. The key functions of ISG include the evaluation and development of thematic investment strategies and complementary product ideas; supplementing GIC's efforts in sourcing and executing investments across asset classes; as well as building and strengthening our relationships with external parties, including the senior management of major corporations and business groups.

Portfolio Execution Group

The Portfolio Execution Group (PEG) was established recently under our revised investment organization structure to enable more efficient beta replication on passive portfolio management. PEG comprises functions such as trade execution, treasury and currency management, asset rebalancing, passive replication and trade completion.

External Managers

GIC partners top-tier fund management institutions that offer access to opportunities, specialised capabilities, in-depth analysis and experience which complement our internal management capability.

We invest in a variety of funds including real estate funds, private equity funds, bond funds, index funds and hedge funds. In addition to the portfolios managed within GIC, we give external fund managers discretionary mandates in a wide range of asset classes such as global fixed income and global equities, while remaining fully accountable for overall performance of the portfolio.

We regularly assess our external managers relative to expected returns, risks and guidelines.

Managing Risks

Identifying and managing risk is a core responsibility of all GIC staff. Each employee has individual accountability and clearly defined responsibilities within a risk management framework where checks and balances are in place. This ensures risks taken are appropriate and in-line with the risk tolerance set by the client. Underpinning the framework is a risk-conscious culture built on an ownership mindset and discipline in risk taking.

While we cannot eliminate all risk from the investments we make, we can increase the odds of favourable outcomes through sustainable processes that are managed by staff who act in accordance with GIC's PRIME values.

Risk Management Objectives

GIC's risk management objectives are to ensure:

1. The investment strategies are consistent with the risk tolerance set by our client, the Singapore Government
2. Policies, guidelines and control processes are in place to reduce the likelihood of significant losses
3. Any reputational impact due to our actions is carefully managed
4. The risks associated with each investment are well-understood and that we are adequately compensated for taking those risks

Risk Governance

The GIC Board provides ultimate risk oversight. It is responsible for determining the risk principles, as well as the risk appetite in conjunction with the investment objectives. The GIC Board is supported by the Board Risk Committee, which advises the Board on risk matters, provides broad supervision on the effectiveness of risk management policies and practices and reviews significant risk issues arising from GIC's operations and investments.

The Group Executive Committee is the highest management body in GIC. It deliberates on investment and risk issues before they are submitted to relevant board committees. It is also the forum that assesses and makes determinations regarding fiduciary risk and reputational risk issues.

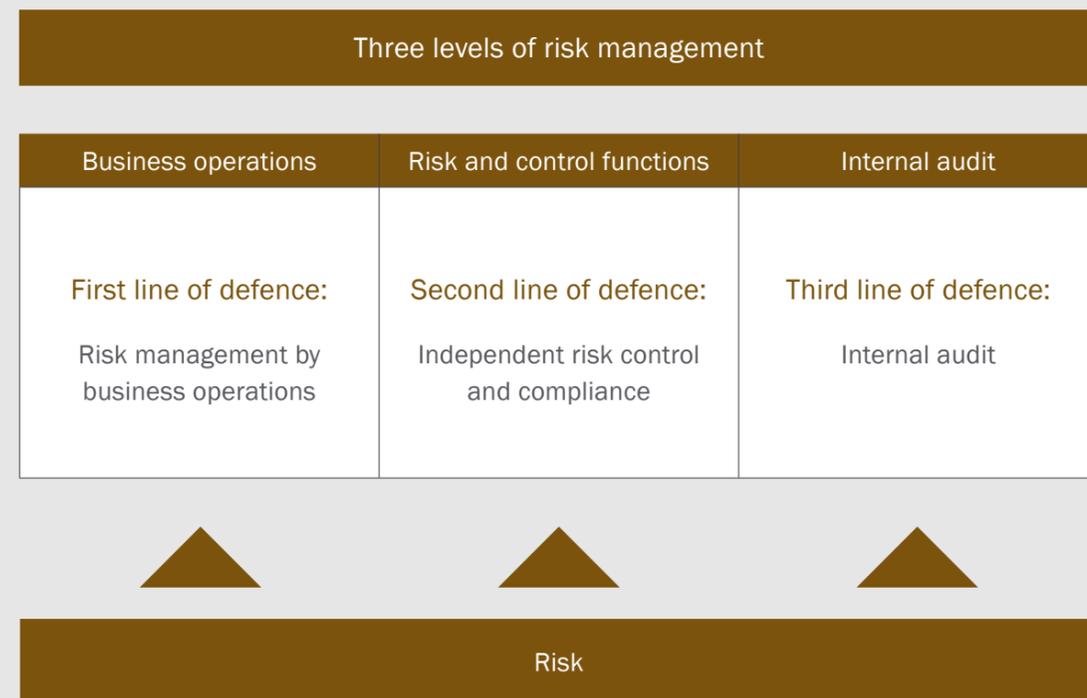
The Chief Risk Officer (CRO) is a member of the Group Executive Committee and reports to the Group President and Chairman of the Board Risk Committee. The CRO is accountable to the Board of Directors, primarily through the Board Risk Committee, on all risk-related matters.

The CRO chairs the Group Risk Committee that is vested with the responsibility to approve risk management policies, oversee the implementation of these policies, review significant risk issues from investments and operations and ensure the resolution of these issues.

Three Lines of Defence

GIC’s risk management model operates along “three lines of defence” which ensure there is clarity and transparency in risk ownership and accountability.

Risk Governance Model



The First Line: Operating Units

People are the cornerstone of any risk management system. All GIC staff are expected to act with integrity, exercise sound judgment, and understand, evaluate and carefully manage the risks they take.

All operating units own and are primarily accountable for the risk inherent in their activities. This includes risk arising from activities managed by appointed agents. All operating units are also responsible for ensuring that an appropriate risk and control environment and robust processes are established as part of their day-to-day operations.

The Second Line: Independent Risk Functions

Risk management and control functions independent of the risk-taking business units are the second line of defence. They provide “checks and balances” through appropriate day-to-day risk oversight and control.

Our control functions include the Risk and Performance Management Department (RPMD), Legal and Compliance Department (LCD) and Finance Department (FD). They each have their defined set of responsibilities respectively, but work collectively to provide the requisite “checks and balances” to the risk-taking activities of GIC’s investment groups.

RPMD is an independent control function which reports to the Director, RPMD, who in turn reports to the Chief Risk Officer (CRO). RPMD is responsible for the independent assessment, measurement, monitoring and reporting of GIC’s investment, counterparty credit and operational risk profile.

LCD reports to the General Counsel who reports directly to the Group President. LCD is responsible for the independent assessment, handling, monitoring, reporting and escalation of significant legal, regulatory and compliance matters to the Group and Board Risk Committees. LCD is also responsible for managing litigation, regulatory inquiries and maintaining and enhancing our relationships with the regulators.

FD reports to the Director, FD, and is responsible for financial management across the GIC group, providing budgeting, accounting, payment processing, cash management, tax as well as financial and management reporting services.

The Third Line: Internal Audit

Our Internal Audit Department provides the third line of defence, conducting periodic reviews of the appropriateness and effectiveness of our internal risk management controls.

Risk Management Approach

Our approach to risk management is multi-pronged:

- I. Managing portfolio investment risk to ensure that risk taken is consistent with our mandate and commensurate with the expected returns;
- II. Managing legal and regulatory compliance risk to ensure that GIC and our clients’ interests are protected and that we comply with applicable laws and regulations;
- III. Managing counterparty credit risk to minimise the impact to GIC if any counterparties were to default;
- IV. Managing reputational risk;
- V. Managing process and infrastructure risk so that investment decisions are implemented properly; and
- VI. Managing people risk.

Our approach to risk management is multi-pronged.

Managing Portfolio Investment Risk

The Policy and Active Portfolios are constructed with our client, the Singapore Government's, long-term real return objective and risk tolerance in mind. Deviation of asset allocation exposure from policy benchmarks is constrained by allocated ranges around the Policy Portfolio's target weights. These ranges are termed as operating bands, and are approved by the GIC Board. The GIC Board also sets an active risk budget to manage the risk arising from the deviation of the Active Portfolio from the Policy Portfolio. A cost of capital framework is implemented to set an appropriate performance hurdle for each active strategy that includes the cost of funding these strategies and a premium for additional risk undertaken.

Policies, guidelines and processes are established to ensure consistency and clarity across the firm while reducing the likelihood of significant unexpected losses to the assets under management. The policies and guidelines translate our investment mandate and the risk management principles into expectations and standards that guide our day-to-day activities. We have processes to identify, measure, report, monitor and mitigate all the risks that are assumed, compensated or uncompensated.

In addition to monitoring the operating bands and active risk budget, RPMD conducts regular monitoring of the active strategies to ensure adherence to the investment thesis and consistency with funding assumptions. RPMD also has regular dialogues with active strategy teams to discuss risk and performance-related issues.

The active risk budget is supplemented by a set of investment guidelines and risk measurements to ensure the essence of the Policy Portfolio is preserved. We monitor for concentration risk as well as other risks that are not fully reflected in our standard risk measures. A variety of risk measures across different time horizons are used to quantify the risks within the GIC Portfolio. These include a mix of statistical and non-statistical measures as well as relative and absolute measures.

Stress tests are conducted across a combination of both historical and forward-looking scenarios. These help GIC identify and manage potential vulnerabilities by determining how extreme yet plausible macroeconomic and geopolitical events may impact the portfolio.

RPMD sets and monitors performance and risk review thresholds independently to highlight instances of unusually large portfolio underperformance. RPMD also highlights potential changes in risk-taking behaviour and inconsistencies with the stated risk and return assumptions. Information systems are used to monitor and evaluate risk criteria, trading limits and investment guidelines within each managed portfolio. Portfolio managers and senior management obtain timely feedback on the risk profiles of our investments through performance and risk attribution tools.

A group-wide investment authorisation framework sets out the approving authorities for investments based on size, and subjects large investments to additional review by the Investment Board. Investment teams in private market asset classes conduct extensive due diligence covering the market, physical, legal and financial aspects of the transactions, as well as the selection of investment partners, holding structures, and exit strategies. The Tax Risk Management Framework underscores our commitment to be compliant with tax laws, rules, regulations and obligations set by the respective governments of the jurisdictions in which we invest and operate. Measurement and operational risks associated with the performance of private market assets are managed via operational and financial controls.

Managing Legal and Regulatory Compliance Risk

Legal and regulatory risk relates to uncertainties in the interpretation and application of laws and regulations, the enforcement of rights or the management of potential litigation, breaches in contracts, laws or regulations.

We require all staff to observe GIC's compliance manual (incorporating the code of ethics), to comply with all applicable laws and regulations, and to uphold exemplary conduct. The Legal and Compliance Department (LCD) conducts training regularly for all staff so they are updated on legal, compliance and regulatory requirements. Such training raises the awareness of operational risk and strengthens GIC's robust and ethical compliance culture. LCD also ensures all staff adhere to their confidentiality obligations and responsibilities. These are with respect to conflict of interests, anti-bribery and corruption, gifts and entertainment, external activities, personal investments, as well as whistle-blowing. It is mandatory for every GIC employee to achieve a passing score for the annual compliance quiz.

The investment and operations teams work closely with LCD to manage legal and regulatory compliance risk arising from the group's investment activities. LCD monitors compliance with laws and regulations, including securities laws (e.g. insider trading, unlawful market conduct, exchange position/foreign investment limits and other reporting requirements) and competition law requirements, licensing and regulatory approvals, anti-bribery and corruption laws, and GIC's information barrier policy. Emerging legal and regulatory issues and proposed regulatory changes are also closely monitored.

Additionally, the in-house legal team works with external lawyers to address legal risks.

Our PRIME values are the compass in the management of our people, processes and portfolio.

Managing Counterparty Credit Risk

GIC adopts a strong control orientation in managing counterparty credit risk, trading only with financially sound and reputable counterparties. A stringent selection and approval process is in place to appoint counterparties. We review the counterparties and monitor our counterparty exposure against set limits and report counterparty profiles to senior management regularly. Other measures to mitigate credit risk include using netting agreements and programmes requiring counterparties to pledge collateral.

Managing Reputational Risk

Managing reputational risk is part of GIC's overall risk management framework. Our governance and investment processes ensure we do not take on undue reputational risk in our pursuit of returns.

This encompasses taking a broad view of our investments to include environmental, social and governance risks, which we factor into our investment due diligence and analysis.

Managing Process and Infrastructure Risk

All investment and operations staff are required to identify, evaluate, manage and report risks in their own areas of responsibility, and to comply with established risk policies, guidelines, limits and procedures.

New investment products or strategies are subject to a risk identification and assessment process conducted by a cross-functional group. This ensures risks associated with the new product or activity are identified and analysed before any new investment. We must be satisfied that the required people and infrastructure, including systems, procedures and controls, are in place to manage these risks.

We assess the control environment to ensure control weakness is promptly identified and addressed. We monitor continuously key risk indicators including late transaction processing, late report releases, stale prices and system downtime. These indicators highlight potential risk areas that need to be addressed in a timely manner to mitigate the risk of loss resulting from possible slippages in GIC's operations.

Infrastructure, including technology and data, plays a critical role to enable effective investment and risk management. Policies and procedures are established to safeguard the physical security and integrity of GIC's technology and data assets.

Our business continuity plan is tested and reviewed regularly to ensure that our procedures and infrastructure can support operations in the event of a business disruption. This enhances corporate resilience and safeguards the group's operations.

Throughout the year, internal and external auditors scrutinise all operations and business processes. Any deficiencies identified must be addressed within set time frames and reported to senior management.

Managing People Risk

We require our staff to observe GIC's code of ethics, maintain exemplary conduct and comply with applicable laws and regulations, including prohibitions against insider trading and other unlawful market conduct.

Staff must handle confidential and non-public information with due care. These guidelines are set out in our compliance manual.

Consistent with our long-term orientation, GIC's remuneration policies and practices support and reinforce a prudent risk-taking culture, as well as recognise and reward our people on the basis of long-term, sustainable results.

People are at the heart of our business. Our PRIME values are the compass in the management of our people, processes and portfolio. Assessment of these values is included in our staff appraisals.

FEATURE ARTICLE: PREPARING FOR A LOW-YIELD ENVIRONMENT

We expect a difficult investment environment with modest growth prospects, greater uncertainty and a high degree of volatility in the macro economy and markets. The long-term (20-year) returns in the coming years are likely to be significantly lower than what we saw since 1980. Nonetheless, our investment philosophy, governance framework, organizational capabilities and market network, all carefully developed over the last 35 years, leave us well-placed to invest in this new environment.

Looking back: High returns from the mid-80s were an exceptional phase in investment markets

Long-term returns can vary substantially over time, even when averaged over 20 years. Looking at a US portfolio of 65% stocks and 35% bonds (for which long-term historical data is available), the annualised 20-year rolling real return has varied very widely around the 5.2% average generated between 1900 and 2015 (see Figure 1). For example, the 20-year real return was below 2% for much of the first half of the 1980s, and was as high as 10% in 2000.

The 20 years ending 2000 which saw outsized returns were in fact an exceptional period in investment history. The strong performance of assets during this period was driven by low starting valuations and the subsequent substantial, fundamental improvements in the world economy. In the early 1980s, nominal bond yields and equity earnings yields in the US were at historical highs, reflecting the US Fed's battle

against inflation. Assets were hence priced low as investors discounted futures earnings with higher interest rates; while earnings expectations were also modest, shaped by the earlier period of poor economic performance. As it turned out, interest rates fell sharply in the years that followed, and the subsequent economic performance was significantly more positive than expected.

The more positive economic outcome could be explained by three factors. First, structural economic changes and improved policies, especially monetary policy, curbed macroeconomic volatility, lowered inflation and drove down interest rates in many advanced economies (see Figure 2). In the US, for example, the inflation rate fell from about 10% in 1981 to around 2% by 1986 after a sharp tightening of monetary policy and a deep recession, and has stayed benign since then. During the 20-year period, 10-year US nominal interest rates fell dramatically from 14% in 1981 to 6% in 2000, causing capital gains in many asset classes. Second, trade liberalisation and growth-enhancing reforms in

emerging markets further boosted global growth and trade. The entry of China and former Soviet Bloc countries into the world economy added to these disinflationary forces. Third, the information technology revolution raised global productivity. In financial markets, the productivity improvement fed overly optimistic expectations in the late 1990s, and temporarily boosted paper gains on technology stocks.

Since 2000, asset returns have experienced a number of large moves, including the crash of the Tech Bubble (2001), the US Credit/Housing Bubble (2003-2007), the Great Financial Crisis and the European Economic and Monetary Union Crisis (2008-2011), and the strong policy-induced recovery (2010-2015). Figure 3 shows the gyrations in the MSCI World Stock Market Index. As a result of the volatile boom-bust investment environment, especially for the stock market since 2000, by the end of 2015 the annualised 20-year rolling real return of the US 65/35 portfolio had fallen to 5.1% (refer to Figure 1).

Figure 1: 20-Year Rolling Real Return of a US 65% stocks/35% bonds portfolio from 1900 to 2015



Figure 2: Lower volatility in growth and inflation from mid-1980s

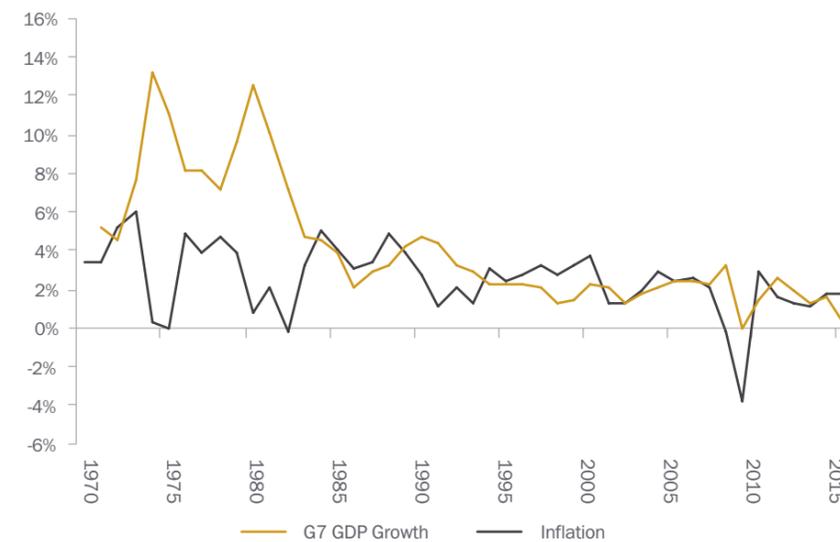
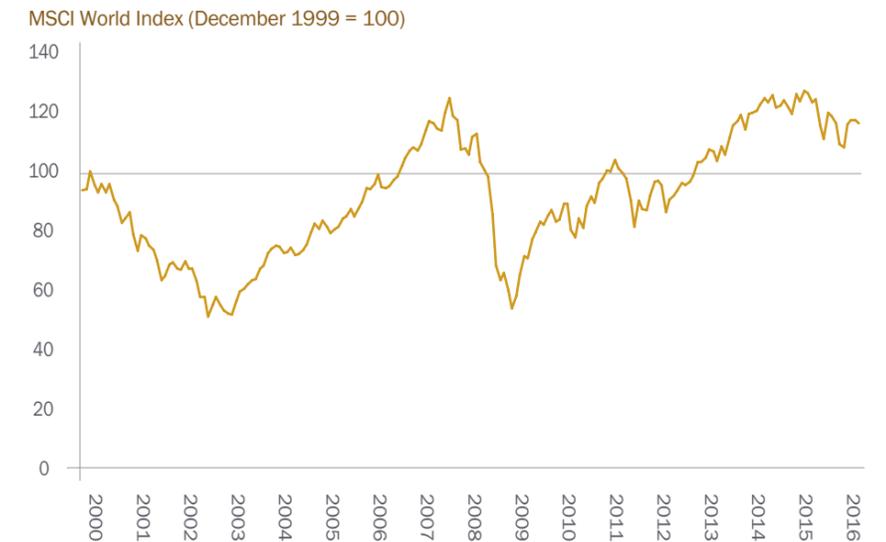


Figure 3: Gyration in the MSCI World Stock Market Index since 2000



Three factors for low returns over the next 10 to 20 years: High starting valuations, historically low interest rates expected to rise over time, modest and uncertain fundamental growth outlook.

Low expected returns over the next 10 to 20 years

We expect low returns from markets over the next 10 to 20 years, due to three factors. First, current valuations of assets are high, and as earlier mentioned, starting asset valuations are a good indicator of future returns. Second, the prevailing historically low interest rates are likely to rise over time, removing an important support for the currently high valuation of assets. Third, the fundamental outlook for future growth and earnings is a modest one with great uncertainty. This will weigh on the prospects of asset returns.

High starting valuations

Medium- to long-term future asset returns are determined by starting valuations and the subsequent fundamental performance. Starting valuations (as proxied by asset yields) are a particularly useful indicator given that they are known today. For bonds, the correlation between beginning yield and final returns is almost 1 (see Figure 4). For equities, a fairly good indicator of future returns is the current Shiller earnings yield. This is defined as the average of 10 years of earnings, adjusted for inflation, divided by the share price of a company or index. It can be used to assess the likely future returns from equities over the medium- to long-term. Figure 5 shows the correlation between the nominal Shiller earnings yield and future equity returns.

Bond yields and the equity earnings yield today, especially in the US, are low relative to their own fundamentals or discounted future earnings. For instance, the US 10-year nominal bond yield at the end of June 2016 is about 1.5%, which means we should expect a 10-year nominal annualised return of about 1.5% if we hold that bond to maturity. The nominal Shiller earnings yield for US equities is currently about 4%, significantly below the historical average of 7% (1900-present). This points to a 10-year ahead nominal return of about 5% on average. A US portfolio made up of 65% equities and 35% bonds would hence be expected to yield a nominal annual average return of about 3-4% over the next 10 years. These expected nominal returns based on starting valuations are low by historical standards. Taking inflation at 2%, we should expect the US 65/35 portfolio to return 1-2% in real terms over the next 10 years, well below the historical average of 5.2%.

Figure 4: 10-year US Bond Returns vs Initial Yields (1900-2016)

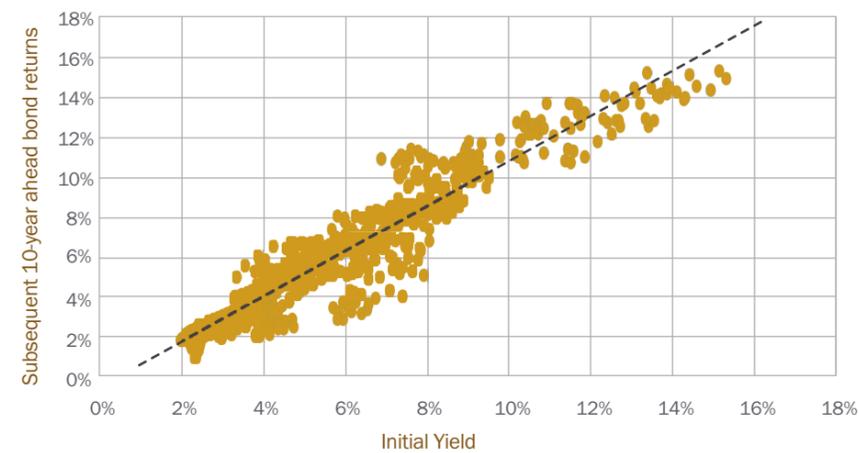
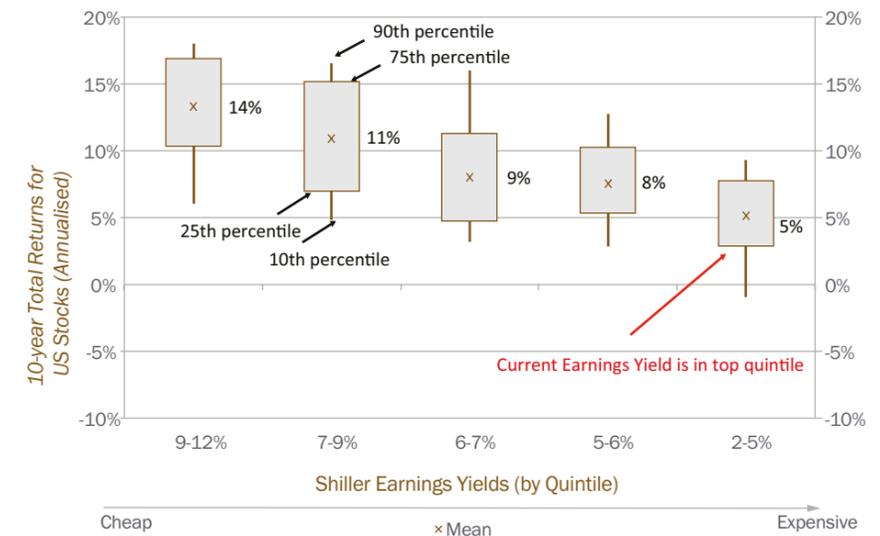


Figure 5: Future Equity Returns Given Shiller Earnings Yield, 1900-present



Historically low interest rates expected to rise over time

Interest rates are unlikely to go much lower than their current low levels (see Figure 6). As at end June 2016, about 30% of global bond markets, or approximately US\$13 trillion of bonds, were offered with negative nominal yields. This means investors must in effect pay interest to invest in these fixed income instruments rather than receive interest for doing so.

In the short to medium term, we expect interest rates to stay at current levels, or rise modestly due to the weak economic outlook. However, even small increases in interest rates will weigh on asset prices and reduce potential returns. Interest rates, as an important component of the discount rate of future cash flows, significantly affect the equity value of companies. Higher interest rates will raise discount rates, and lower the present values of assets.

Figure 6: Historically low interest rates



Modest and uncertain growth fundamentals

Besides high starting valuations, the fundamental outlook for assets is also subdued and uncertain. We anticipate three possible scenarios for the next 10 to 20 years. One scenario is that of a “back to normal” world, where over time the global economy and financial markets recover. Growth in the developed world turns out somewhat lower but this is offset by China and India, although all the major countries will be dealing with aging populations. In this scenario, interest rates will rise, though slowly, while equities will benefit from continued growth. We expect that over 20 years, taking into account both starting valuations and the fundamentals in this “back to normal world”, real annualised returns on global bonds would be 0-1% and that of global equities around 3%.

In the second scenario, the global economy is in “stagnation” for a long period of time. This may be triggered by a US recession, the Eurozone breaking up, or a China hard-landing. Regardless the cause, it will be much more difficult for central banks to maintain confidence. Political and social forces will also push for de-globalisation, resulting in trade and investment restrictions. These combined factors will trap the global economy in sub-par, mediocre growth for a long period of time. In such a world, we would expect bonds to perform better while equities suffer.

The third and last scenario is “stagflation”. This occurs because a combination of high debt, easy monetary policy, and populism eventually results in many countries tolerating higher inflation. Economic growth, however, does not improve. In this scenario, both bonds and equities would perform poorly.

How GIC invests in a low-yield, high-uncertainty environment

GIC anticipates significantly lower and more volatile returns in the next 10 to 20 years, compared to our experience in the last two to three decades. Our key sources of return will remain the Policy Portfolio and the Active Portfolio. While our investment framework and approach

remain sound, we will need to adjust some parts of our strategy as conditions change. We will continue to emphasise generating returns through a long-term, diversified and relatively conservative portfolio.

Policy Portfolio

Most critically, we have to ensure that our portfolio does reasonably well in a range of plausible scenarios. This means the portfolio needs to be diversified along multiple dimensions (such as across different regions and return drivers), keep its overall risk within our tolerance threshold, and have a mix that allows us to harvest risk premiums over the long term. We will also continue to explore new asset classes and portfolio construction approaches.

Active Portfolio

For a number of years, GIC has focused on building a diversified portfolio of active investment strategies. Our investment framework guides us in allocating risk capital to strategies that are expected to add to overall portfolio returns. In the new environment we will continue to do so, and be even more vigilant as both risks and opportunities are likely to increase. In addition, we will strive harder to reduce portfolio costs as any such savings are direct additions to our portfolio returns.

Conclusion

Looking ahead, we expect a difficult investment environment with modest growth prospects, greater uncertainty and more volatility in the macro economy and markets. The long-term (20-year) returns are likely to be significantly lower than what we saw since 1980. Nonetheless, our investment philosophy, governance framework, organizational capabilities and market network, all carefully developed over the last 35 years, leave us well-placed to invest in this new environment.

GOVERNANCE

The Government, represented by The Ministry of Finance (MOF), sets the investment objective, risk parameters and investment horizon for the portfolio. It also ensures a competent board of directors is in place.

GIC was incorporated in 1981 under the Singapore Companies Act and is wholly owned by the Government of Singapore. It was set up with the sole purpose of managing Singapore's foreign reserves and currently invests well over US\$100 billion globally in a wide range of asset classes and instruments. As a rule, GIC invests outside Singapore.

Source and Purpose of Funds

GIC is a fund manager for the Government, and does not own the assets that it manages. The sources of the Government's assets managed by GIC, as stated by the MOF, include proceeds from the issuance of Singapore Government Securities (SGS) and Special Singapore Government Securities (SSGS), Government budget surpluses and proceeds from the Government's land sales.

The Government does not specify to GIC the proportion of assets from each source. The Government mandates GIC to manage all assets in a single pool, on an unencumbered basis and without regard to their source, with the aim of achieving good long-term real returns. (An explanation of the Government's framework for managing its assets and liabilities is available on the MOF's website.)

Each year, the GIC Portfolio returns are tapped by the Government for its annual Budget and spent on key public services that improve the lives of Singaporeans. Under the Constitution, the Government is allowed to spend up to 50% of the long-term expected real return on the net assets managed by GIC and those owned by the Monetary Authority of Singapore and Temasek Holdings¹ in its annual Budget. The Government's reserves therefore provide a stream of returns that benefit present and future generations of Singaporeans.

The President of Singapore

Since 1991, the Constitution of Singapore has provided for the President of Singapore to be elected directly by Singaporeans every six years. The President is independent of the Government and must not be a member of a political party.

The Constitution gives the President discretionary powers to protect the reserves not accumulated by a government during its current term of office. The system aims to prevent the government of the day from drawing on past reserves or spending reserves not accumulated during its current term in office.

As a Fifth Schedule company, GIC is directly accountable in a number of key areas to the Singapore President, who is empowered to access any information he needs to safeguard the country's reserves. No one may be appointed to or removed from the GIC Board without his concurrence. This additional layer of control ensures that the company appoints only people of integrity who are competent and can be trusted to safeguard these assets.

The Government

The Government mandates GIC to manage Singapore's foreign reserves with the aim of achieving good long-term real returns. The mandate sets out the terms of appointment, investment objectives, investment horizon, risk parameters and investment guidelines for managing the reserves. In particular, the expectation on the amount of risk GIC can bear is characterised by the Reference Portfolio.

The Government, represented by the Ministry of Finance, holds the GIC Board accountable for the overall portfolio performance. It does not direct or influence GIC's decisions on individual investments.

GIC provides monthly and quarterly reports to the Government through the Accountant-General of Singapore. These reports list the financial transactions, as well as the holdings and bank account balances. The reports also provide detailed performance and risk analytics, as well as the distribution of the portfolio by asset class, country and currency.

Once a year, the GIC Management formally meets the Minister for Finance and his officials to report on the risk and performance of the portfolio in the preceding financial year.

¹ Temasek Holdings was added into the NIRC framework with effect from FY16/17.

The GIC Board is responsible for the Policy Portfolio which determines GIC's long-term asset allocation and is accountable to the MOF for the overall performance of the portfolio.

The Auditor-General of Singapore

The Auditor-General, who is appointed by the President of Singapore, submits an annual report to the President and Parliament on his audit of the Government and other bodies managing public funds. This audit includes the Government's portfolio managed by GIC and the main companies in the GIC Group - GIC Asset Management, GIC Real Estate and GIC Special Investments. These companies are also audited by GIC's internal audit.

Other companies in the group and the investment holding companies are audited by public accounting firms.

The GIC Board

The GIC Board is responsible for the GIC's Policy Portfolio which determines the long-term asset allocation strategy and for the overall performance of the portfolio. GIC's asset allocation operates within the risk constraints determined by the Government in its mandate to GIC and represented by the Reference Portfolio.

The Board is supported by five board committees.

Board Committees

Investment Strategies Committee

The Investment Strategies Committee reviews and evaluates management recommendations on asset allocation before they are submitted to the GIC Board for decision. The Management reports to this committee on the performance of the portfolio. The committee recommends the key drivers for GIC's return and risk outcomes, and does not decide on specific deals.

Investment Board

The Investment Board provides oversight of GIC's investment processes and its implementation, with particular attention to large individual

investments. It is not involved in the asset allocation decisions, which are the responsibility of the GIC Board. It also ensures GIC does not take on undue reputational risk in pursuit of good returns.

Risk Committee

The Risk Committee advises the GIC Board on risk matters and broadly supervises the effectiveness of risk management policies and practices. It reviews GIC's risk profile as well as significant risk issues arising from operations and investments.

Audit Committee

The Audit Committee reviews and assesses the adequacy and effectiveness of internal controls, including financial, operational and compliance, and risk management policies and procedures. It also supervises and evaluates the effectiveness of the internal audit function. The committee reviews the integrity of the financial reporting process and other related disclosures for GIC companies, significant ethics violations, the impact of changes in the regulatory and legal environment, and issues of fraud and financial loss.

Human Resource and Organization Committee

The Human Resource and Organization Committee oversees organizational matters in GIC, including compensation policies, talent development, succession planning and organizational development.

International Advisory Board

The International Advisory Board provides the GIC Board, board committees and GIC Management global and regional perspectives on geopolitical, economic and market developments. It provides advice and perspective on a range of investment-related matters, in particular, global investment trends, emerging asset classes and new growth opportunities.

The GIC Management is responsible for formulating and executing investment strategies and for individual investments. The Management also reports to the MOF on the risk and performance of the portfolio.

GIC Management

GIC Management formulates and executes investment strategies. Once the long-term asset allocation strategy (as set out in its Policy Portfolio) is decided by the GIC Board, the Management seeks to add value through an overlay of active, skill-based strategies (i.e. Active Portfolio). The management structure is relatively flat and comprises four committees with clear reporting lines and accountability.

1. Group Executive Committee

The Group Executive Committee is the highest management body in GIC, bringing together the Group's functional and investment heads. It deliberates on management proposals on organizational, investment and risk issues before these are submitted to the relevant board committees and the GIC Board. The committee reviews and approves major business, governance and policy issues which apply to the entire group, and oversees organizational management initiatives, business planning and personnel matters (including succession planning, talent development, compensation and performance management).

2. Investment Management Committee

The Investment Management Committee assists the Group Executive Committee to implement investment policies and active strategies. It regularly reviews matters related to portfolio management, including rebalancing, portfolio liquidity, capital budget usage, active strategy implementation, risk methodologies, scenarios and stress loss. This committee is expected to monitor the performance and risk of the portfolio, including active strategies, on a monthly basis.

3. Direct Investment Steering Committee

The Direct Investment Steering Committee oversees the strategic plan, as well as the progress and pace of direct investments across GIC. It also reviews relationships with investee companies to help identify and develop deal opportunities. This committee does not approve investments.

4. Group Risk Committee

The Group Risk Committee provides oversight for the risk management policies and practices for the GIC Group. The committee also acts as a forum for the Chief Risk Officer to solicit views on the strategic risk management issues that would enable him to carry out his duties.

Boards of Asset Management Companies

All three asset management companies – GIC Asset Management, GIC Real Estate and GIC Special Investments – are wholly-owned subsidiaries responsible for investing the portfolio within the guidelines set out in the Investment Mandate to GIC. Their boards oversee investment strategies of the asset classes under management, and review operations of the companies according to Group policies.

Governance Structure Overview

The following chart summarises the accountability of the GIC Board, International Advisory Board and board committees.

		Terms of reference
GIC Board		<p>Responsible for the GIC's Policy Portfolio which determines its long-term asset allocation strategy and for the overall performance of the portfolio.</p> <p>Does not approve individual investments which are the responsibilities of the management.</p>
International Advisory Board		Provides views on market developments generally and, in particular, the medium- to long-term outlook for investment opportunities around the world.
Board Committees	Investment Strategies Committee	<p>Assists the GIC Board in evaluating management's recommendations on asset allocation, and in its oversight of overall portfolio performance.</p> <p>Recommends the key drivers for GIC's return and risk outcomes.</p> <p>Does not approve individual investments.</p>
	Investment Board	Assists the GIC Board in its oversight of GIC's investment process, with particular attention to large individual investments.
	Risk Committee	Oversees the effectiveness of risk management policies and practices in the GIC Group.
	Audit Committee	<p>Looks into the effectiveness of the internal control systems for safeguarding company's assets and client's investment portfolios.</p> <p>Reviews the integrity of the financial reporting process, significant ethics violations, compliance with regulatory and legal requirements, and issues of fraud and financial losses.</p>
	Human Resource and Organization Committee	Oversees organizational matters in GIC, including compensation policies, talent development, succession planning, and organizational development.
GIC Management		<p>Formulates and executes investment strategies.</p> <p>Constructs Active Portfolio, with an overlay of active, skill-based strategies.</p>

GIC BOARD AND BOARD COMMITTEES

Board of Directors	Board Committees	International Advisory Board	Group Committees				
<p>Board of Directors</p> <p>Chairman Lee Hsien Loong</p> <p>Directors Lim Hng Kiang Teo Chee Hean Tharman Shanmugaratnam Heng Swee Keat Ang Kong Hua Peter Seah Lim Huat Chew Choon Seng Raymond Lim Siang Keat Hsieh Fu Hua Loh Boon Chye Gautam Banerjee Suppiah Dhanabalan Lim Siong Guan Lim Chow Kiat</p>	<p>Investment Strategies Committee</p> <p>Chairman Tharman Shanmugaratnam</p> <p>Deputy Chairman Peter Seah Lim Huat</p> <p>Members Lim Hng Kiang Ang Kong Hua Heng Swee Keat S Iswaran</p> <p>Advisors Dr Martin L Leibowitz G Leonard Baker Jr Knut Kjaer David Denison</p> <p>Investment Board</p> <p>Chairman Ang Kong Hua</p> <p>Members G Leonard Baker Jr Léon Bressler David Denison Hsieh Fu Hua Choo Chiau Beng Koh Boon Hwee (appointed 15 January 2016)</p>	<p>Risk Committee</p> <p>Chairman Lim Hng Kiang</p> <p>Members Seck Wai Kwong Raymond Lim Siang Keat Loh Boon Chye</p> <p>Advisor Dr Martin L Leibowitz</p> <p>Audit Committee</p> <p>Chairman Chew Choon Seng</p> <p>Members Raymond Lim Siang Keat Loh Boon Chye Gautam Banerjee</p> <p>Human Resource and Organization Committee</p> <p>Chairman Peter Seah Lim Huat</p> <p>Members Chew Choon Seng Hsieh Fu Hua Gautam Banerjee</p>	<p>Chairman Teo Chee Hean</p> <p>Members G Leonard Baker Jr Léon Bressler Dr Martin L Leibowitz Deepak Parekh Knut Kjaer David Denison</p>	<p>Group Executive Committee</p> <p>Chairman Lim Siong Guan Group President</p> <p>Lim Chow Kiat Deputy Group President and Group Chief Investment Officer</p> <p>Members Lim Kee Chong Deputy Group Chief Investment Officer and Director, Integrated Strategies</p> <p>Dr Jeffrey Jaensubhakij Deputy Group Chief Investment Officer and President, Public Markets</p> <p>Goh Kok Huat President, Real Estate and Chief Operating Officer</p> <p>Tay Lim Hock President, Private Equity & Infrastructure</p> <p>Dr Chia Tai Tee Chief Risk Officer</p> <p>Dr Leslie Teo Eng Sipp Chief Economist and Director, Economics & Investment Strategy</p>	<p>Investment Management Committee</p> <p>Chairman Dr Jeffrey Jaensubhakij Deputy Group Chief Investment Officer and President, Public Markets</p> <p>Members Dr Chia Tai Tee Chief Risk Officer</p> <p>Dr Leslie Teo Eng Sipp Chief Economist and Director, Economics & Investment Strategy</p> <p>Bryan Yeo King Ming Chief Investment Officer, Equities</p> <p>Liew Tzu Mi Chief Investment Officer, Fixed Income</p> <p>Ang Eng Seng Chief Investment Officer, Infrastructure</p> <p>Choo Yong Cheen Chief Investment Officer, Private Equity</p> <p>Lee Kok Sun Chief Investment Officer, Real Estate</p> <p>Betty Tay Hui Choo Head, External Managers Department</p>	<p>Direct Investment Steering Committee</p> <p>Chairman Lim Chow Kiat Deputy Group President and Group Chief Investment Officer</p> <p>Members Dr Jeffrey Jaensubhakij Deputy Group Chief Investment Officer and President, Public Markets</p> <p>Lim Kee Chong Deputy Group Chief Investment Officer and Director, Integrated Strategies</p> <p>Goh Kok Huat President, Real Estate and Chief Operating Officer</p> <p>Tay Lim Hock President, Private Equity & Infrastructure</p> <p>Bryan Yeo King Ming Chief Investment Officer, Equities</p> <p>Choo Yong Cheen Chief Investment Officer, Private Equity</p> <p>Lee Kok Sun Chief Investment Officer, Real Estate</p> <p>Ang Eng Seng Chief Investment Officer, Infrastructure</p>	<p>Group Risk Committee</p> <p>Chairman Dr Chia Tai Tee Chief Risk Officer</p> <p>Members Dominic Lim Kwang Wei Director, Risk & Performance Management Charles Lim Sing Siong General Counsel Chan Hoe Yin Director, Finance Joyce Tan Siew Pheng Director, Investment Operations Ong Hian Leong Director, Technology Dr Leslie Teo Eng Sipp Chief Economist and Director, Economics & Investment Strategy Choy Siew Kai Director, Data & Analytics Kwok Wai Keong Co-Head Asia/Global Head, Asset Management, Real Estate John Tang Global Head, Global Investments, Strategy & Risk, Private Equity & Infrastructure Leong Wing Kwan Head, Investment Services Office, Public Markets</p>

PROFILES



LEE HSIEN LOONG
Prime Minister

Lee Hsien Loong has been Prime Minister of Singapore since 2004. He was previously Deputy Prime Minister and has also held ministerial appointments in Trade and Industry, Defence and Finance. Mr Lee chaired the Monetary Authority of Singapore from 1998 to 2004, where he shifted MAS towards a lighter supervisory touch. As Prime Minister, he launched SkillsFuture to support Singaporeans in embracing lifelong learning and skills, and the Smart Nation initiative to use technology to create a future of better living, more opportunities and stronger communities. Before entering politics, Mr Lee was a Brigadier-General in the Singapore Armed Forces.

Mr Lee has a BA (First Class Honours) in Mathematics and a Diploma in Computer Science from Cambridge University, as well as a Masters in Public Administration from Harvard University.



LIM HNG KIANG
Minister for Trade
& Industry (Trade)

Lim Hng Kiang, the Minister for Trade and Industry (Trade), chairs the GIC Risk Committee and sits on the Investment Strategies Committee. He is also Deputy Chairman of the Monetary Authority of Singapore. Mr Lim was Minister for Trade and Industry from 2004 until 2015, when the Ministry was carved into two portfolios. In his current appointment, Mr Lim oversees trade negotiations, the Economic Development Board and Jurong Town Corporation. He has held Cabinet posts in National Development, Health, Foreign Affairs, Finance and the Prime Minister's Office. Before entering politics in 1991, he was Deputy Secretary in the Defence and National Development ministries.

Mr Lim graduated from Cambridge University with First Class Honours (Distinction) in Engineering. He later earned a Masters in Public Administration from Harvard University.



THARMAN SHANMUGARATNAM
Deputy Prime Minister & Coordinating
Minister for Economic and Social Policies

Tharman Shanmugaratnam is Deputy Prime Minister and Coordinating Minister for Economic and Social Policies. He chairs the GIC Investment Strategies Committee. He is also a member of the Group of Thirty, an independent global council of leading economic and financial policy-makers and academics. He previously served as Minister for Education and Finance, respectively. From 2011 to 2015, he was Chairman of the International Monetary and Financial Committee, the key policy forum of the IMF, and its first chair from Asia. Before entering politics in 2001, he was Managing Director of the Monetary Authority of Singapore, and is currently its Chairman.

Mr Shanmugaratnam read Economics at the LSE, and has a Masters in Economics from Cambridge University. He also holds a Masters in Public Administration from Harvard University where he was named a Lucius N Littauer Fellow.



TEO CHEE HEAN
Deputy Prime Minister & Coordinating
Minister for National Security

Teo Chee Hean has been Deputy Prime Minister of Singapore since 2009. He chairs the GIC International Advisory Board. He is currently Coordinating Minister for National Security and Minister in charge of the Civil Service. He also oversees the National Population and Talent Division, the National Climate Change Secretariat, and is Chairman of the National Research Foundation. Mr Teo has held Cabinet positions in Home Affairs, Defence, Education, Finance, Environment, and Communications. Prior to entering politics in 1992, he was the Chief of Navy holding the rank of Rear Admiral.

Mr Teo graduated with a BSc (First Class Honours) in Electrical Engineering and Management Science from the University of Manchester. He holds an MSc (Distinction) in Computing Science from Imperial College and a Masters in Public Administration from Harvard University, where he was named a Littauer Fellow.



HENG SWEE KEAT
Minister for Finance

Heng Swee Keat is the Minister for Finance, and is a member of the GIC Investment Strategies Committee. He chairs a national committee that is studying strategies for Singapore's future economy. Mr Heng served as Minister for Education from 2011 to 2015. Before entering politics in 2011, he was Managing Director of the Monetary Authority of Singapore. He served as Permanent Secretary of the Ministry of Trade and Industry, overseeing economic policy, trade negotiations, and the regulation and development of industry, as well as CEO of the Trade Development Board. Between 1997 and 2000, he was Principal Private Secretary to then-Senior Minister Lee Kuan Yew.

Mr Heng has an MA in Economics from Cambridge University, and also holds a Masters in Public Administration from the Kennedy School of Government, Harvard University.



ANG KONG HUA
Chairman
Sembcorp Industries Ltd

Ang Kong Hua is the Chairman of Sembcorp Industries. He chairs the GIC Investment Board and sits on the Investment Strategies Committee. He has helmed several of Singapore's biggest companies, bringing years of experience spanning the manufacturing, services and financial sectors. Mr Ang started his career at the Economic Development Board. He then joined DBS Bank at its inception in 1968 and pioneered its investment banking division. From 1974, he was CEO of NSL (formerly NatSteel) until he retired in 2003, and stayed as its Executive Director until 2010. He was previously Chairman of Global Logistic Properties, Singapore Telecommunications and Singapore Post, Vice-Chairman of Neptune Orient Lines, and a Director of DBS Bank, CIMC Raffles Offshore (Singapore) and k1 Ventures.

Mr Ang holds a BSc (Honours) in Economics from the University of Hull.

PROFILES



PETER SEAH LIM HUAT
Chairman
DBS Group Holdings Ltd

Peter Seah Lim Huat is the Chairman of DBS Group Holdings. He chairs GIC's Human Resource and Organization Committee, and is Deputy Chairman of the Investment Strategies Committee. He heads the boards of Singapore Health Services, LaSalle College of the Arts, and the National Wages Council, and is Deputy Chairman of Singapore Airlines. He was a banker for 33 years before retiring as Vice-Chairman and CEO of the former Overseas Union Bank in 2001. He was also President and CEO of the Singapore Technologies Group. Mr Seah has been on the board of DBS since 2009, and chairs DBS Bank (Hong Kong). He also serves on the boards of StarHub, Level 3 Communications Inc, Asia Mobile Holdings, Fullerton Financial Holdings and STT Communications.

Mr Seah graduated from the University of Singapore with a degree in Business Administration.



CHEW CHOON SENG
Chairman
Singapore Exchange Ltd
& Singapore Tourism Board

Chew Choon Seng is the Chairman of Singapore Exchange and also heads the Singapore Tourism Board. He is the Chairman of the GIC Audit Committee and a member of the Human Resource and Organization Committee. An engineer by training, Mr Chew started his career in Singapore Airlines and was with the airline for nearly 40 years. Until his retirement in 2010, Mr Chew was its CEO and Deputy Chairman of its listed subsidiary, SIA Engineering Company Limited. He was also a member of the Board of Governors of the International Air Transport Association from 2003 to 2010, and its Chairman from 2006 to 2007.

Mr Chew graduated with a Bachelor of Mechanical Engineering (First Class Honours) from the University of Singapore. He also has an MSc in Operations Research and Management Studies from the Imperial College of Science and Technology, University of London.



RAYMOND LIM SIANG KEAT
Chairman
APS Asset Management

Raymond Lim is the Executive Chairman of APS Asset Management and sits on the GIC Risk and Audit Committees. He is a Senior Advisor to John Swire & Sons, and a Director of several companies including Hong Leong Finance, Raffles Medical Group, Swire Properties and Insurance Australia Group. A former Cabinet Minister, Mr Lim served ministerial posts including Foreign Affairs, Trade and Industry, Entrepreneurship, Finance and Transport. Previously, he was Managing Director of Temasek Holdings, CEO of DBS Vickers Securities and Group Chief Economist of ABN Amro Asia Securities. Mr Lim also served on the Board of Governors of the International Monetary Fund and the World Bank.

Mr Lim has a Bachelor of Economics from Adelaide University, a BA (Jurisprudence) from Oxford University, and a Master of Law from Cambridge University.



HSIEH FU HUA
Chairman
UOB Group

Hsieh Fu Hua is the Chairman of United Overseas Bank. He is a member of the GIC Investment Board, as well as the Human Resource and Organization Committee. He is Co-Founder and Advisor to PrimePartners Group and Chairman of Tiger Airways. He also serves on the boards of several non-profit organizations and chairs the National Gallery Singapore, the National Council of Social Service and the Stewardship Asia Centre. Mr Hsieh started his career in merchant banking and capital markets in 1974 when he joined Morgan Grenfell Asia Holdings upon graduation, eventually rising to head the organization. Subsequently he served as Group Managing Director of BNP Prime Peregrine Group Hong Kong, CEO of Singapore Exchange and President of Temasek Holdings.

Mr Hsieh holds a Bachelor of Business Administration (Honours) from the University of Singapore.



LOH BOON CHYE
Chief Executive Officer
Singapore Exchange Ltd

Loh Boon Chye is the CEO of Singapore Exchange. He sits on the GIC Risk and Audit Committees. He started his career as an investment officer with the Monetary Authority of Singapore in 1989. He was with Deutsche Bank for 17 years, where he most recently was Head of the Corporate and Investment Banking division, Asia Pacific, and has also worked at Morgan Guaranty Trust Co of New York, managing its South East Asia fixed income and derivatives business. Prior to his SGX appointment, he was Deputy President for Asia Pacific and Head of Asia Pacific Global Markets at Bank of America Merrill Lynch, and the firm's Country Executive for Singapore and South East Asia.

Mr Loh holds a Bachelor of Engineering degree from the National University of Singapore.



GAUTAM BANERJEE
Senior Managing Director and Chairman
Blackstone Singapore

Gautam Banerjee is a Senior Managing Director and Chairman of Blackstone Singapore. He sits on the GIC Audit as well as the Human Resource and Organization Committees. Before joining Blackstone, Mr Banerjee spent over 30 years with PricewaterhouseCoopers, serving as Executive Chairman of PwC Singapore for nine years until he retired in 2012. He serves on the boards of Singapore Airlines, EDBI Pte Ltd, Piramal Enterprises, and The Indian Hotels Company Limited, and is also the Vice-Chairman of the Singapore Business Federation.

Mr Banerjee has a BSc (Honours) in Accounting and Financial Analysis from the University of Warwick. He is a Fellow of the Institute of Chartered Accountants in England and Wales, the Institute of Singapore Chartered Accountants and the Singapore Institute of Directors.

PROFILES



S DHANABALAN

Member
Council of Presidential Advisers

S Dhanabalan is a member of the Council of Presidential Advisers. He chairs the board of trustees of the Temasek Trust and Mandai Safari Park Holdings. He was Chairman of Temasek Holdings, Singapore Airlines and DBS Group Holdings, and sat on the board of GIC from 1981 to 2005. Mr Dhanabalan joined the Civil Service in 1960, before moving to the newly-formed Economic Development Board in 1961. As the need for industrial capital grew, he was part of a small group that established the Development Bank of Singapore, where he served from 1968 to 1978. After entering politics in 1976, Mr Dhanabalan served as Minister for Foreign Affairs, National Development, Trade and Industry, Culture and Community Development.

Mr Dhanabalan holds a degree in Economics from the University of Malaya.



S ISWARAN

Minister for Trade & Industry
(Industry)

S Iswaran is the Minister for Trade and Industry (Industry), addressing economic restructuring, productivity growth, and creating a vibrant domestic economy and enterprise ecosystem. He sits on the GIC Investment Strategies Committee. He oversees the Agency for Science, Technology and Research, Energy Market Authority, International Enterprise Singapore, Singapore Tourism Board, Sentosa Development Corporation and SPRING Singapore. Since joining the Civil Service in 1987, Mr Iswaran has served in the Ministries of Home Affairs and Education. He was Director for Special Projects in the National Trades Union Congress and CEO of the Singapore Indian Development Association. He was also Director for Strategic Development at Singapore Technologies and Managing Director of Temasek Holdings.

Mr Iswaran graduated from the University of Adelaide with First Class Honours in Economics. He holds a Master of Public Administration from Harvard University.



CHOO CHIAU BENG

Former Senior Advisor
Keppel Corporation Limited

Choo Chiau Beng was Senior Advisor to the Board of Keppel Corporation from 1 Jan 2014 to 31 Dec 2015. He is a member of the GIC Investment Board. Mr Choo started his career at Keppel Shipyard after graduating in 1971, and went on to become CEO of Keppel Fels, Chairman and CEO of Keppel Offshore & Marine, and CEO of Keppel Corp. He retired in 2014. He sits on the boards of Keppel Care Foundation and KrisEnergy, and is Chairman of M1. Mr Choo serves on the National Research Foundation board and the A*Star Science and Engineering Research Council. He is Singapore's Non-Resident Ambassador to Brazil.

Mr Choo holds a BSc (First Class Honours) and an MSc in Naval Architecture from the University of Newcastle upon Tyne.



KOH BOON HWEE

Chairman
Credence Partners Pte Ltd

Koh Boon Hwee is the Chairman of Credence Partners Pte Ltd. He sits on the GIC Investment Board. He is also the Chairman of Sunningdale Tech, Yeo Hiap Seng, Far East Orchard, Rippledot Capital Advisers, FEO Hospitality Asset Management and AAC Technologies Holdings Inc, Deputy Chairman of the Securities Industry Council, and a Director of Agilent Technologies. He started his career in 1977 at Hewlett-Packard and rose to become its Managing Director in Singapore from 1985 to 1990. From 1991 to 2000, he was Executive Chairman of the Wuthelam Group. Mr Koh was also the Chairman of the Singapore Telecom, Singapore Airlines and DBS Bank.

Mr Koh received his Bachelor's Degree (First Class Honours) in Mechanical Engineering from the Imperial College of Science and Technology, University of London, and his MBA (Distinction) from Harvard Business School.



SECK WAI KWONG

Chief Executive Officer, Asia Pacific,
State Street Bank and Trust Company

Seck Wai Kwong is the Chief Executive Officer, Asia Pacific at State Street Bank and Trust Company. He is a member of the GIC Risk Committee. Prior to joining State Street in 2011, he was Chief Financial Officer of the Singapore Exchange for eight years, and has also held senior positions in the Monetary Authority of Singapore, GIC, Lehman Brothers and DBS Bank. He is a member of the MAS' new Financial Centre Advisory Panel, and is a Trustee and chairs the Investment Committee at the Singapore Police Force's pension fund. He also serves on the Board of Regents of Trinity International University in Chicago and the Advisory Committee for the Quantitative Finance Program at the Chinese University in Hong Kong.

Mr Seck graduated from Monash University with First Class Honours in Economics. He also has an MBA from the Wharton School at the University of Pennsylvania.



LEONARD BAKER

Partner
Sutter Hill Ventures

G Leonard Baker Jr is a Partner in Sutter Hill Ventures. He advises GIC's Investment Strategies Committee and sits on the Investment Board. He was a trustee of Yale University, where he chaired the Finance Committee and served on the Yale Investment Committee from 1990 to 2015, and also a member of the Advisory Council of the Stanford Graduate School of Business. Mr Baker is a board member of Stanford Management Company, advises the David and Lucile Packard Foundation Investment Committee, and is a board member of the US Environmental Defense Fund. He is also a member of the Board of Trustees of Berklee College of Music in Boston. In 2005, he was conferred the Public Service Star Award in Singapore for his contributions in the areas of education and investment management.

Mr Baker holds a BA in Mathematics from Yale and an MBA from Stanford.

PROFILES



LÉON BRESSLER
Managing Partner
Aermont Capital

Léon Bressler is the Managing Partner of Aermont Capital LLP, formerly Perella Weinberg Real Estate UK LLP, since its inception in 2007. He is a member of the GIC Investment Board. Prior to joining Perella Weinberg Partners, Mr Bressler was the Chairman and CEO of Unibail (now Unibail-Rodamco). Under his leadership, Unibail grew to become Europe's largest real estate investment trust. Mr Bressler began his career with Chase Manhattan Bank in Paris, before joining the Midland Bank Group where he became the Chairman of the Executive Board of Midland Bank SA. He has also held positions as CEO of the Lanvin Group and Managing Partner of Worms & Cie.

Mr Bressler is a graduate of the Institut d'Etudes Politiques de Paris and has a degree in Law.



DR MARTIN LEIBOWITZ
Managing Director
Morgan Stanley

Dr Martin Leibowitz is a Managing Director with Morgan Stanley Research's global strategy team. He advises GIC's Investment Strategies and Risk Committees. Prior to joining Morgan Stanley, Dr Leibowitz was the Vice-Chairman and Chief Investment Officer of TIAA-CREF, responsible for the management of more than US\$300 billion in equity, fixed income and real estate assets. He was also Director of Global Research at Salomon Brothers, and has received wide recognition for his writings on various financial topics and investment analysis. He now serves on the investment advisory committees of the Harvard Management Corporation, Rockefeller Foundation, Carnegie Foundation, IMF Pension Fund, American Academy of Arts and Sciences, and The Institute for Advanced Study.

Dr Leibowitz holds both an AB and MS degree from the University of Chicago and a PhD in Mathematics from the Courant Institute of New York University.



DEEPAK PAREKH
Chairman, Housing Development Finance Corporation

Deepak Parekh has been Chairman of India's Housing Development Finance Corporation (HDFC) since 1993. He started his career at Ernst and Ernst (now Ernst and Young) Management Consultancy Services in New York, moving to Grindlays Bank and Chase Manhattan Bank before joining HDFC. He is currently Non-Executive Chairman of BAE Systems India (Services) Pvt Ltd, GlaxoSmithKline Pharmaceuticals and Siemens India. He is also on several boards, including Fairfax Financial Holdings Corporation, Indian Hotels Company Ltd and Mahindra & Mahindra Ltd. Mr Parekh was awarded India's Padma Bhushan in 2006, the Federal Republic of Germany's Cross of the Order of Merit in 2014, the French Republic's "Knight in the Order of the Legion of Honour" – 2010, and was the first international recipient of the ICAEW Outstanding Achievement Award – 2010.

Mr Parekh is a Chartered accountant from ICEAW, UK, and a Commerce Graduate from Mumbai University.



KNUT KJÆR
Founding Partner
Trient Asset Management

Knut Kjær became the Founding CEO of the Norwegian Sovereign Wealth Fund, Norges Bank Investment Management (NBIM), in 1998. When he left in 2008, he had built an asset management team that grew NBIM's reserves from US\$25 billion to US\$400 billion. Mr Kjær is currently the Founding Partner of Trient Asset Management and Chairman of FSN Capital Partners. He is an advisor to the GIC Investment Strategies Committee and a member of the investment committee of the Dutch pension fund ABP. He is also a member of the MAS Investment and Risk Advisory Panel and sits on the International Advisory Council of the China Investment Corporation.

Mr Kjær holds a Masters in Economics and a degree in Political Science from the University of Oslo.



DAVID DENISON
Former President and CEO
Canada Pension Plan Investment Board

David Denison is a corporate director with extensive experience in the financial services industry. He advises the GIC Investment Strategies Committee and sits on the Investment Board. He served as President and CEO of the Canada Pension Plan Investment Board from 2005 to 2012. Prior to that, he was President of Fidelity Investments Canada Limited. Mr Denison currently serves as Chairman of Hydro One Limited, Vice-Chairman of Sinai Health Systems, and is a director of Royal Bank of Canada, BCE Inc and Allison Transmission Inc. He also sits on the International Advisory Council of the China Investment Corporation and the World Bank Treasury Expert Advisory Committee. He was named an Officer of the Order of Canada in 2014.

Mr Denison earned Bachelor of Arts and Education degrees from the University of Toronto and is a Fellow of the Institute of Chartered Accountants of Ontario.

EXECUTIVE MANAGEMENT



LIM SIONG GUAN
Group President

Lim Siong Guan was appointed Group President of GIC in September 2007. He had previously headed the Singapore Civil Service, and been Permanent Secretary in the Ministries of Defence, Education, Finance, and the Prime Minister's Office. He was a former Chairman of the Singapore Economic Development Board, and is a Professor in the Lee Kuan Yew School of Public Policy at the National University of Singapore. He founded Honour (Singapore), a charity that seeks to promote a culture of honour and honouring. He co-authored two books with Joanne H. Lim, "The Leader, The Teacher & You" and "Winning with Honour".

Mr Lim graduated with First Class Honours in Mechanical Engineering from the University of Adelaide, and has a Postgraduate Diploma in Business Administration from the National University of Singapore.



LIM CHOW KIAT
Deputy Group President
Group Chief Investment
Officer

Lim Chow Kiat has been Group Chief Investment Officer of GIC since February 2013 and was appointed Deputy Group President concurrently in June 2016. He joined GIC as a portfolio manager upon graduation in 1993, developed GIC's investment capability in corporate bonds and rose to head the fixed income, currency and commodities department. He was President, Europe in 2009, overseeing investments and relationships in Europe, Africa and the Middle East before his appointment as President of GIC Asset Management in 2011. Mr Lim is a trustee of Nanyang Technological University, board member of Wealth Management Institute, member of the Singapore government's Committee on Future Economy and member of Agence France Trésor's Strategic Committee.

Mr Lim holds a First Class Honours degree in Accountancy from Nanyang Technological University, Singapore.



DR JEFFREY JAENSUBHAKIJ
Deputy Group Chief
Investment Officer
President, Public Markets

Dr Jeffrey Jaensubhakij has been President, Public Markets and Director of Public Equities at GIC since April 2013, and was concurrently appointed Deputy Group Chief Investment Officer in June 2016. Dr Jaensubhakij joined GIC in 1998 as a Senior Economist covering the US economy. He has held asset allocation portfolio responsibilities as Co-Head of Asset Allocation Strategy in the Economics and Strategy Department, and from 2003 to 2011 was Head of Total Return Equities and the US Equities teams based in GIC's New York Office. In 2011, he was appointed President, Europe, responsible for coordinating GIC's investment activities in Europe across public and private asset classes.

Dr Jaensubhakij holds a BA in Economics from Cambridge University, as well as a Masters and a PhD in Economics from Stanford University.



LIM KEE CHONG
Deputy Group Chief
Investment Officer
Director, Integrated Strategies
Group

Lim Kee Chong has been GIC's Deputy Group Chief Investment Officer and Director of Integrated Strategies Group since April 2013, and is currently based in GIC's New York Office. He joined GIC in 1987, and built his career in the Equities Department. He was appointed Head of global equities in July 2010. In his tenure at GIC, he has managed portfolios running the gamut of developed market equities, as well as global sector and global equities portfolios. As Director of Integrated Strategies, he heads a unit that looks at opportunities in both public and private companies.

Mr Lim graduated with an Economics degree from the University of Tokyo, where he studied under a government scholarship.



GOH KOK HUAT
Chief Operating Officer
President, Real Estate

Goh Kok Huat has been GIC's Chief Operating Officer since April 2014 and President, GIC Real Estate since July 2011. He joined GIC Real Estate in 2009 as Managing Director, Asia – Investment Management. Mr Goh joined GIC from Tishman Speyer in New York, where he headed the firm's emerging markets portfolio management, before being appointed Managing Director of equity capital markets. Prior to that, he was with the Ascendas Group, where he held various senior appointments including COO of the Group, CEO of Ascendas-MGM, CEO of Singapore Operations, CEO of India Operations and CEO of Bangalore IT Park. He spent 10 years in the military upon graduation.

Mr Goh has a BA in Economics from Cambridge University.



TAY LIM HOCK
President, Private Equity
& Infrastructure

Tay Lim Hock has been President, Private Equity & Infrastructure since July 2011. He joined GIC Special Investments in 1995, and worked on private equity investments in Asia. Mr Tay relocated to London to head GIC's European private equity team from 2000 to 2003, and moved to San Francisco as Head of the US private equity team in 2003. He became the Global Head of the Funds and Co-investment group in 2008. Prior to GIC, Mr Tay worked as an aeronautical engineer with the Republic of Singapore Air Force.

Mr Tay graduated with a Masters in Aeronautical Engineering from l'Ecole Nationale De L'Aviation Civile (ENAC) in France, and completed the Stanford Executive Program.



DR CHIA TAI TEE
Chief Risk Officer

Dr Chia Tai Tee is Chief Risk Officer at GIC. Before his appointment in July 2011, he served as Deputy Chief Risk Officer and Director of Risk and Performance Management Department. He has held various positions in economics and strategy, foreign exchange, and quantitative investments, and was Deputy Director of Investment Policy and Strategy Department. Dr Chia sits on the EDHEC-Risk Institute International Advisory Board, and is a member of Singapore People's Association Investment Advisory Committee, Singapore Institute of Technology endowment fund Investment Committee as well as the Ministry of Home Affairs Pension Plan Risk and Audit Committee. Prior to joining GIC in 1994, he was a lecturer at the National University of Singapore.

Dr Chia graduated with a degree in Economics from the University of Adelaide and holds a PhD from Australian National University.



DR LESLIE TEO ENG SIPP
Chief Economist
Director, Economics &
Investment Strategy

Dr Leslie Teo is GIC's Chief Economist and Director of Economics & Investment Strategy. He joined GIC from the International Monetary Fund, where he was Deputy Division Chief and Assistant to the Director of the Asian Department. Dr Teo started his career as an economist at the IMF in 1996, and has also served at the Monetary Authority of Singapore. He joined GIC as a senior investment manager in the Economics & Strategy Department in 2008. He headed GIC's Asian/Emerging Market Research and Strategy team before being appointed Deputy Director of the Economics & Investment Strategy Department.

Dr Teo has a BA in Economics from the University of Chicago, an MA in Economics, and a PhD in Economics and Finance from the University of Rochester.

OUR PEOPLE

GIC is a global organization headquartered in Singapore, with offices in 10 cities staffed by more than 30 different nationalities.

1,300+

More than 1,300 employees

Our people are our key asset in an increasingly complex global economic environment.

Our Global Team

More than 1,300 employees manage our investments from our offices in Singapore, Beijing, London, Mumbai, New York, São Paulo, San Francisco, Seoul, Shanghai and Tokyo. Regardless of role or location we are one GIC team, engaged in the common pursuit of investing Singapore's reserves to secure Singapore's financial future.

We demand excellence and expect the best from our people, who are our key asset in an increasingly complex global economic environment. We develop our people through challenging assignments and programmes. We encourage all to innovate and improve, but without ever compromising on our PRIME values and The GIC Way.

Recruiting Talent

We are highly selective in our recruitment, searching for talented and resourceful team players with the drive to excel, the courage to innovate and the agility to adapt to change.

The GIC Professionals Programme (GPP) recruits recent graduates globally for training on the fundamentals of investing, rotations to various functional areas in GIC, and coaching by experienced professionals. Graduates of the GPP are deployed to an investment or business professional area which supports their career at GIC.

Our GIC Internship Programme takes in promising undergraduates who, by working with us, gain practical insights into the fund management industry and a chance to consider a possible career with GIC.

GIC also recruits mid-career professionals who are experts in their respective fields. The bar for such recruits is high and we expect them to add to our existing capabilities and create new opportunities, as well as be teachers and mentors who guide our younger employees.

We believe a culture of enterprise and innovation is critical to our business success.

10

10 offices worldwide

Developing Our People

We invest significantly in employee development to equip our people for their work. Our dedicated resources and vast network offer many opportunities for exposure and learning. The GIC School provides a well-rounded learning experience for all our employees. It runs foundation programmes to ensure our people are clear about the expectations, responsibilities and challenges at each level and the competencies required. The School harnesses the deep experience of our people to deliver regular in-house investment and management workshops.

As a large global fund manager investing across diverse asset classes, we take advantage of exceptional internal development opportunities. These include attachments with external fund managers, postings to global offices and assignments to different business groups. Our leaders and supervisors play an active role in people development through learning communities, workshops and internal case studies.

Recently ranked the third most desirable global asset management firm to work for¹, we also have a distinct wellness culture that values, promotes and supports ongoing employee well-being. Every September, we celebrate Global Wellness Month with a host of wellness-focused activities coordinated across our 10 offices worldwide.

We believe a culture of enterprise and innovation is critical to our business success. We encourage our people to push the boundaries and express their creativity through an umbrella programme, ACE – Agile, Creative and Enterprising. ACE covers initiatives that harness the energy and imagination of our people at all levels.

Leadership Changes

Mr Charles Lim was appointed Managing Director on 1 June 2016. Managing Directors Mr Richard Chan, Ms Suzi Cohen, Mr Christopher Morrish and Mr Soong Hee Sang retired from GIC between December 2015 and May 2016. We are grateful for their many years of loyal service and their valuable contributions to GIC.

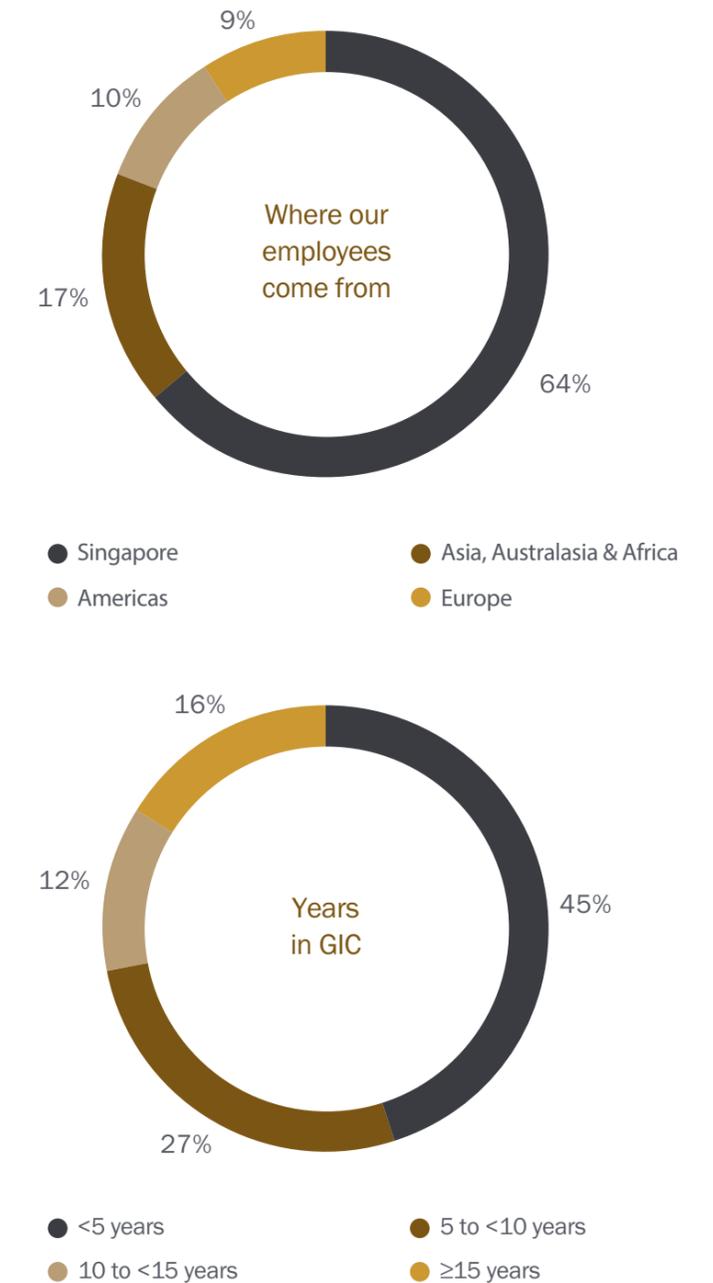
Our Alumni Network

We value every opportunity to reconnect with our former staff and keep them updated on developments in GIC. We regularly hold gatherings for our alumni communities in Singapore, New York and London through GIC Connect, our global alumni network.

Social Programmes

We believe in supporting sustainable social programmes that benefit the local community and groom future leaders. In 2015, we launched GIC Sparks, an initiative aimed at empowering committed Singaporean students from low-income households to make a difference in the lives of others. The GIC Sparks recipients are trained by social service professionals to develop mentorship and counselling skills, before being connected with underprivileged children and teenagers to whom they offer tutorship, career advice and companionship. The recipients receive a grant which supports them in their studies.

We partnered The Purple Symphony, Singapore's largest inclusive orchestra comprising persons with special needs and disadvantaged individuals, to launch a training award which offers a unique opportunity to develop talented Singaporeans. Through this experience of learning and performing, the recipients will grow in confidence and inspire all to play more active roles in our communities.



¹ GIC was ranked 3rd in the 2016 Ideal Employer Rankings Survey by efinancialcareers, one of the world's leading financial services careers websites. BlackRock and Fidelity took the 1st and 2nd place respectively.

OUR OFFICES





www.gic.com.sg