Global Economic Policy Lab

Adapting to an Aging Society: Challenges, Risks, and Reform Strategies for China's Public Pension Investment

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Key Messages

China's pension system is facing mounting financial pressure under the context of a rapidly aging population. This paper evaluates the challenges confronting China's pension system, identifies key structural weaknesses, and explores potential reforms by examining global pension investment models. After analyzing successful approaches from other countries, we recommend China to diversify investment across asset classes and international markets. To ensure long-term sustainability and financial security, China should also enhance its second and third pillar of the pension system.

Section 1: The Economic Burden of Aging Population

China's aging population has significantly increased the financial burden on the working-age population. From 2013 to 2023, the total age dependency ratio grew from 35.3% to 46.5%, indicating that every 100 working-age individuals must support an increasing number of dependents (Figure 1).

While the child dependency ratio remained relatively stable, the elderly dependency ratio surged from 13.1% in 2013 to 22.5% in 2023 (Figure 1). This means that in 2013, every 100 working-age individuals (15-64 years old) supported approximately 35 non-working dependents (children aged 0-14 and elderly aged 65+). By 2023, this number had risen to around 46 dependents per 100 workers, a significant increase in the financial and social burden for the working population.

The young-to-elderly support ratio in China has declined over the past decade, dropping from 7.6 workers per elderly person in 2013 to just 4.4 in 2023. Projections indicate that by 2025, one working-age individual will have to support one elderly person. Such a demographic shift will further strain the pay-as-you-go (PAYG) pension model, already facing sustainability challenges due to the shrinking workforce and increasing pension payouts. The current pension framework, which relies heavily on contributions from younger workers, requires major reforms.

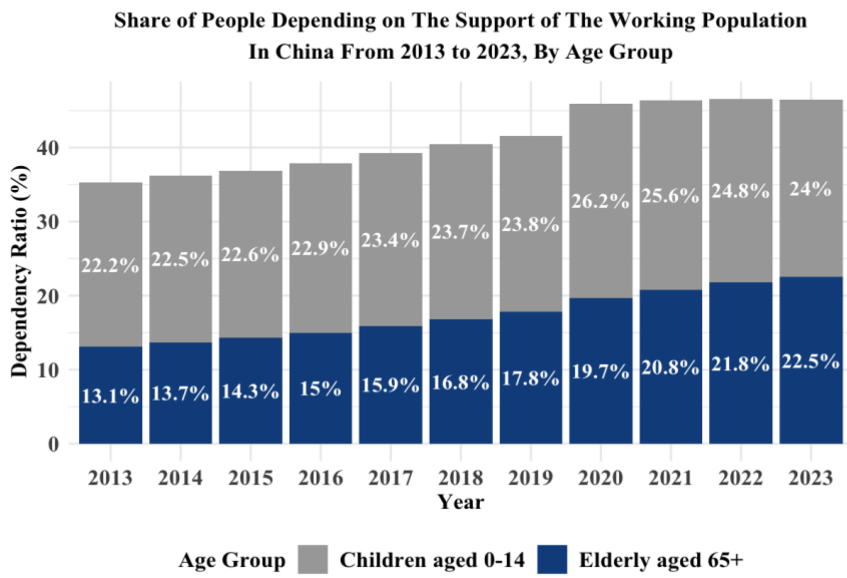


Figure 1
Source: National Bureau of Statistics of China

Section 2: Pension Expenditure as a Share of Nominal GDP

As the elderly dependency ratio continues to rise, fewer workers are contributing to the pension system while the number of retirees drawing benefits increases. This imbalance has directly contributed to the steady rise in public pension expenditure as a share of nominal GDP from 3.3% in 2013 to 5.4% in 2023 (Figure 2). The most rapid increase occurred between 2013 and 2018, when pension expenditure grew by nearly two percentage points, surpassing 5% of GDP in 2018.

Although the pension expenditure ratio has stabilized between 5.2% and 5.4% since 2020, this stabilization does not necessarily mean the pension system is sustainable (Figure 2). Instead, it reflects mounting fiscal constraints and an economic slowdown, forcing the government to limit further pension fund expansion. Moreover, slower nominal GDP growth in recent years has contributed to the stabilization of this ratio, as weaker economic expansion reduces the denominator effect. With pension obligations continuing to rise, fiscal adjustments—such as delayed retirement, higher contributions, or benefit reductions—will become inevitable.

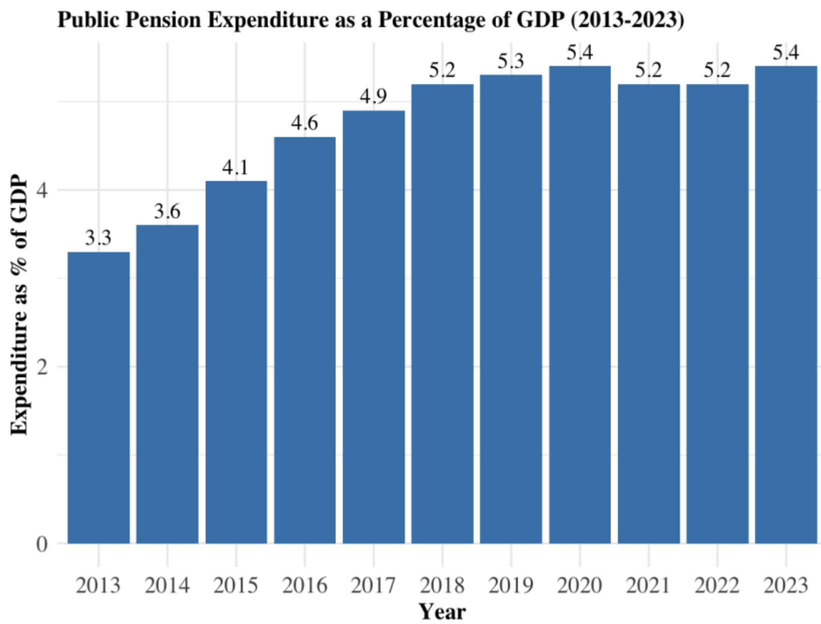


Figure 2

Source: [Ministry of Human Resources and Social Security of the People's Republic of China (MOHRSS)]

Section 3: China's Three-Pillar Pension System

China's pension system is structured into three pillars: government-backed insurance, employer-sponsored plans, and private retirement savings. The table below provides an overview of each pillar, including participation numbers, contribution rates, and average pension benefits.

Pillar	Type	Participants (2024, in millions)	Contribution Rate	Avg. Pension Received	Cumulative Balance Funds
First Pillar	Urban Employee Pension	534.49 (+13.29 YoY)	Employer 16% + Employee 8%	¥3,326/month	890.4 billion USD
	Urban/Rural Resident Pension	538.30 (-6.92 YoY)	Fixed levels (¥100–¥2,000 /year)	¥179/month	203 billion USD
Second Pillar	Enterprise Annuity (Private)	Limited (Large firms, SOEs)	Employer up to 8% + Employee up to 4%	Varies	358.4 billion USD
	Occupational Annuity (Public)	All public sector employees	Employer 8% + Employee 4%	Varies	～400 billion USD
Third Pillar	Private Pension Scheme	72+ (as of Nov. 2024)	Up to ¥12,000/year (voluntary)	Varies	19.88 billion USD

Table 1

Source: General Office of the State Council, General Office of the State Council, FP, ThePaper.cn, Xinhuanet, Bank of China

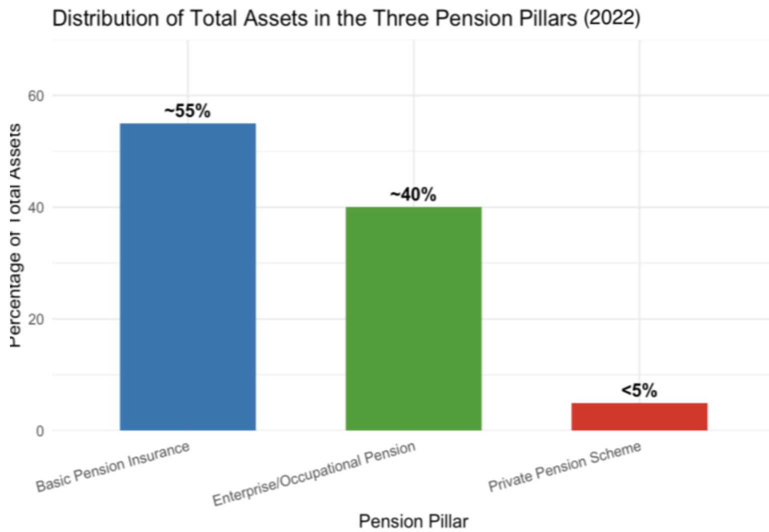


Figure 3
Source: Bank of China

Section 4: China's Pension Fund Centralization

The pension fund system in China, particularly fund collection and distribution, have historically been managed at the provincial and municipal levels. In 2017, the State Council initiated reforms to centralize pension fund management. The National Council for Social Security Fund of the People's Republic of China (SSF) was established and gradually took control of pension assets across the country.

Since the transition, the SSF's managed assets have expanded significantly. In 2017, the total fund under its control stood at ¥315.51 billion. By 2023, this amount had grown to ¥2,231.55 billion, reflecting an average annual growth rate of 38.55% (Figure 4). Today, the SSF oversees nearly all assets within China's first-pillar pension system, which serves as the primary retirement security for most citizens.

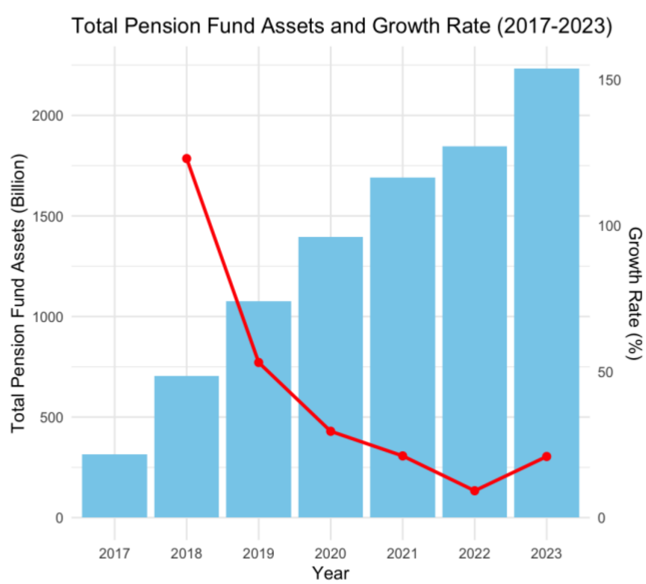


Figure 4
Source: SSF

Section 5: Investment Performance

Despite rapid asset growth, the SSF's investment performance remains weak. Since 2017, the average annual nominal return has been 5.06% while inflation has averaged 1.74% (Figure 5). The SSF allocates most assets to low-risk investments such as bank deposits and government bonds. Though nearly 30% of the portfolio was allocated to financial markets, the investment outcomes remain poor. In 2023, interest income alone exceeded total reported income, meaning the fund suffered net losses in all other investment categories (Table 2). The Fair Value Gains on Trading Assets section reported a loss equivalent to 11% of total income, reflecting declining asset values. These unrealized losses do not immediately impact the SSF's financial statements, but they indicate persistent underperformance of the pension investments.

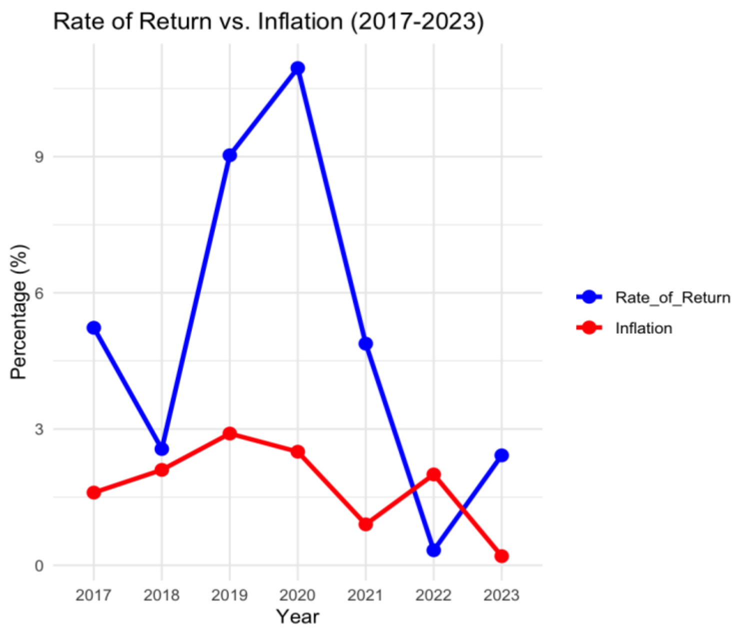


Figure 5
Source: SSF

2023 SSF Financial Overview (in ¥)	
Total Income	48,726,114,263.62
Interest Income	60,940,757,377.91
Securities Spread Income	-12,258,141,520.42
Dividend Income	5,093,909,467.51
Derivative Financial Instrument Gains	-192,796,687.98
Fair Value Gains on Trading Assets	-5,380,193,733.66
Tax Refund Income	311,141,521.93
Other Income	211,437,838.33

Table 2
Source: SSF

Over time, interest income has become the dominant revenue source for NCSFF's investments while the financial market investments have consistently underperformed (Figure 6). The only exception was 2020, when returns were slightly positive. Given this track record, the NCSSF's investment strategy warrants reassessment.

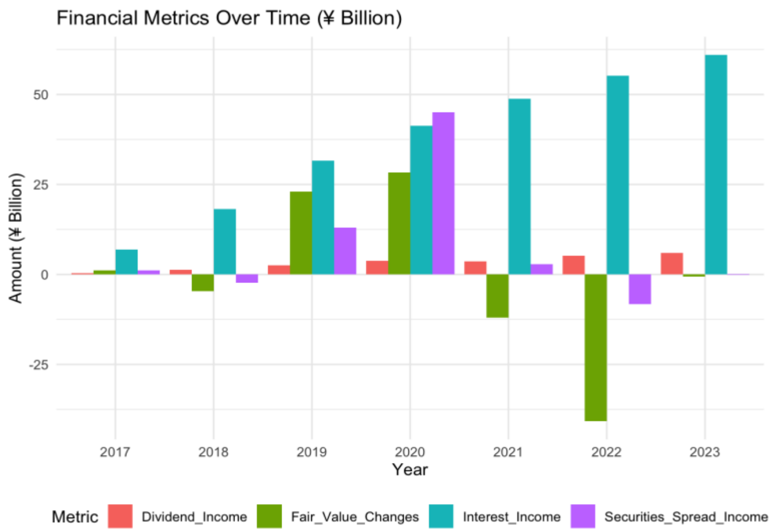


Figure 6
Source: SSF

Section 6: Lessons for Reforming China's Pension System

Diversifying investment helps hedge concentration risk and achieve greater risk-adjusted returns

China's public pension investment should adopt a more diversified strategy by allocating assets across multiple classes. According to relevant regulatory provisions, the upper limit for basic pension insurance fund investments in equity assets in China is 30%. As a result, the average annual investment return of China's basic pension insurance fund is 5%, low compared to pension management funds in other countries.

Meanwhile, many European and North American countries impose no such restrictions on investment proportions or scale. They maintain a diversified portfolio that includes private equity, venture capital funds, real estate, infrastructure, commodities, and foreign assets. A comparison of data from the six large global pension management institutions (and China) in the last 20 years shows that their equity allocation ratios reached as high as 60%. As illustrated in the chart below, over the long term, the proportion of equity assets is positively correlated with investment returns. New Zealand's NZSF allocates approximately 61% of its assets to equities, while the U.S. CalPERS and Canada's CPPIB have equity allocations of 58% and 59%, respectively. Correspondingly, their annualized returns in the last 20 years far exceeded those of China's pension fund, with NZSF at 10%, CalPERS at 9.3%, and CPPIB at 9.2%, compared to China's 5% return.

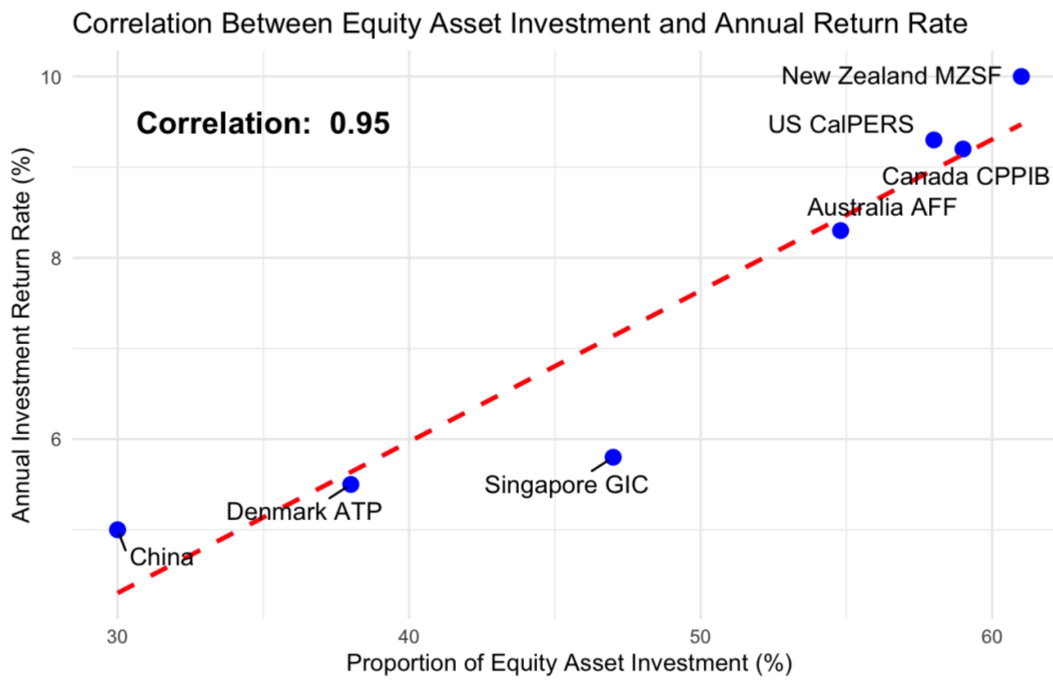


Figure 7

Source: National Financial Regulatory Administration (NFRA)

Diversifying investment to the oversea markets

China should expand its pension fund investments to the oversea markets to enhance returns and mitigate domestic economic risks. Currently, China's pension fund investments are required to remain within domestic markets. On the one hand, fluctuations in the RMB-to-USD exchange rate create uncertainty and a weaker RMB can reduce the value of foreign investments when converted back, leading to concerns regarding instability in pension fund returns from investing abroad. In the long run, however, the RMB is likely to appreciate against the USD given the lower inflation environment that comes with an aging population. Keeping pension funds in China supports businesses, economic restructuring, and market stability, as well as national economic strategy, while large foreign investments potentially risk capital outflows and market destabilization. Therefore, China has a strict foreign exchange control system that imposes restrictions on large-scale overseas investments, limiting the scope of the pension fund investments abroad.

In contrast, many European and North American pension funds do not impose restrictions on overseas investments and have great exposures to global markets. Figure 8 shows the strong positive correlation between global investment and annual investment return across large public pension funds. Countries with more diversification into the international market showcase stronger annual investment returns compared to China.

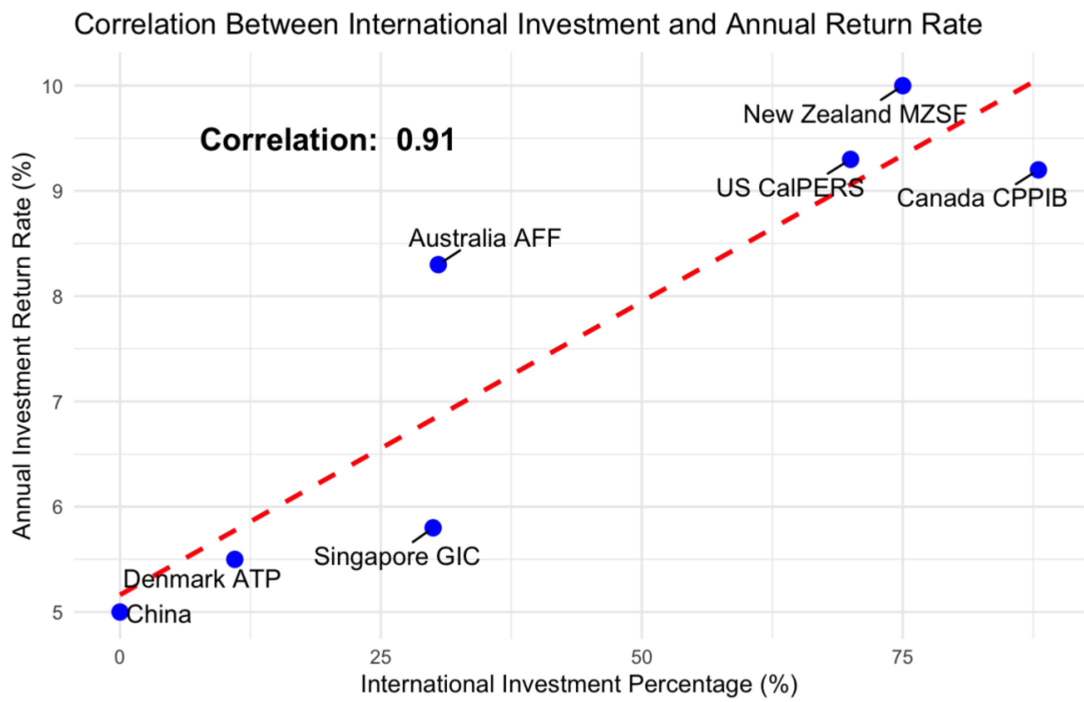


Figure 8
Source: MZSF, AFF, CPPIB, CalPERS, GIC, ATP, National Council for Social Security Fund

The investment portfolio of the Canada Pension Plan Investment Board (CPPIB) serves as a good case illustrating the benefits of investment diversification. Private equities constitute the largest share at 31%, followed by public equities at 28%, indicating a strong focus on equity investments. Credit (13%) and government bonds (12%) make up a smaller but significant portion, suggesting some allocation to fixed income for stability. Infrastructure and real estate each account for 8%, reflecting a diversified investment strategy that includes alternative assets.

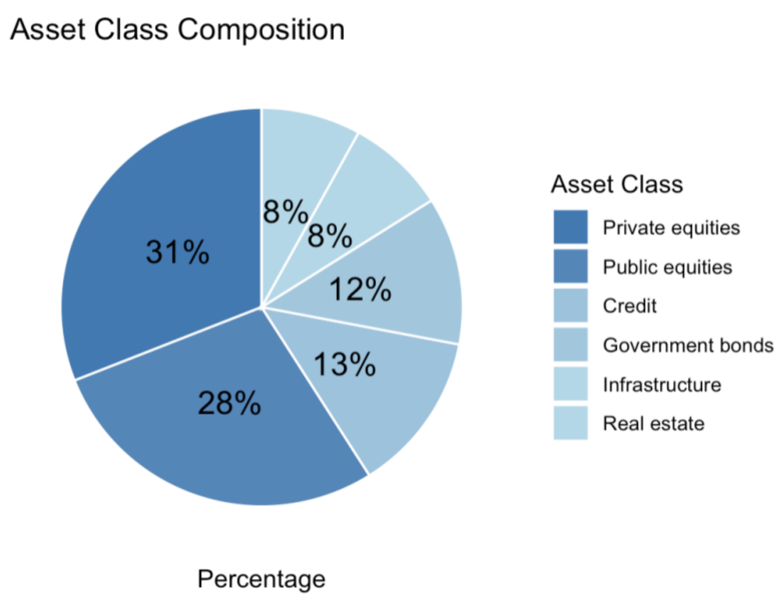
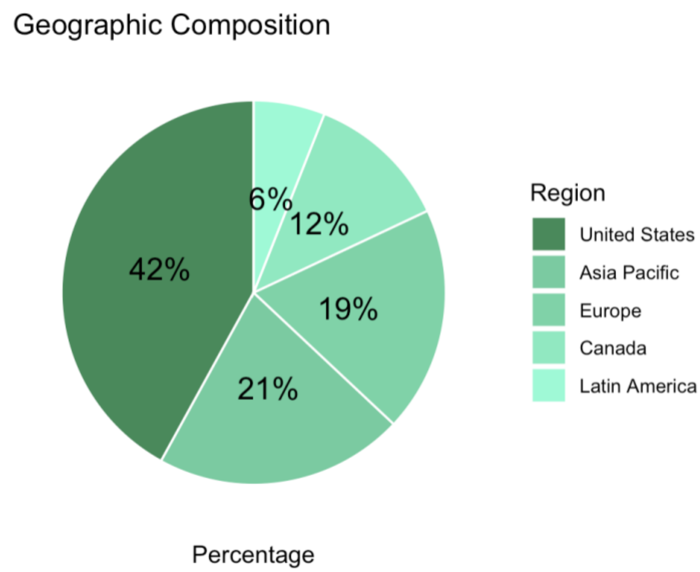


Figure 9
Source: CPP Investments

CPP also invests internationally. The well-developed capital market in the United States has attracted 42% of CPP's investment. Asia and Europe are also important investment markets for CPP. However, domestic investment in Canada accounts for only 12%.



As a result, the long-term investment performance of the CPP Fund has been strong, with a net annual return of 8% and an annualized net return of 9.2% over a 10-year period.

Drawing from the experiences of Canada and other Western countries, China should consider increasing investment in high-quality overseas assets and expanding the proportion of direct equity investments in enterprises. While there are valid reasons for limiting international investments, a more diversified approach could enhance returns and reduce economic vulnerabilities in the future.

Strengthening the Second and Third Pillar

Against the backdrop of a rapidly aging population, it is difficult to maintain a pay-as-you-go system relying solely on the first-pillar pension insurance system, and it will be even more difficult to fulfill intergenerational commitments. Data shows that the second and third pillar in China remain relatively weak compared to the domination of the first pillar. Strengthening the multi-level and multi-pillar pension insurance system and emphasizing the supplementary protection role of the second and third-pillar pension insurance systems is crucial. Key will be a better coverage rate and actual contribution ratio of enterprise annuities entails improvement. Enterprise annuities covered approximately 31.44 million employees, accounting for only 6.03% of the 520 million participants in the urban employee basic pension insurance system. In terms of the third pillar, public willingness to participate remains low and the general public's awareness of personal pensions is insufficient. Since personal pensions are still in the pilot phase, many people do not yet have a full understanding of the system. In the future, public financial education, incentives, accessibility, and transparency of public pension investment should be further improved to increase public willingness of participation.