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Developing countries' pension systems - some lessons from Russia

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Both engineers an mathematicians believe in Normal distribution. Engineers think that it is a mathematical theorem; mathematicians think that it is an empirical fact.

(An old statistician's joke)

(Almost) obvious statements

- Introduction of an obligatory funded pillar is the best way of improving state pension system
- International experience shows that returns of private pensions' funds are higher than wage growth
- Diversify by investing in:

  1) PAYGO and Funded pillars

  2) Developed markets

  3) Less profitable but less volatile kinds of investment

Some History

- Institute of Actuaries, London, 1998.

  Statement: “Aims of universal social security in old age are best met by the development of independently funded and invested pension provision”.

  Hot discussion; and the voting was almost equal: 60 in favor of the motion and 68 against it.

- International Congress of Actuaries, Paris, 2006.

  Statement: “Both PAYGO and funded pension systems have advantages and disadvantages, and the funded system cannot be viewed as superior”.

  No discussion at all.

Comparison of PAYGO and Funded pension systems

- Comparison of two defined *contribution* systems: funded and non funded (Notional defined contribution system, NDC)
- NDC is a PAYGO system arranged like a defined contribution system. Contributions are accumulated using some notional interest rate.
- In the long run an NDC system would provide the same *sustainable* average level of pensions as an “usual” defined benefit PAYGO system.
- The comparative advantages mostly depend on rates of return (notional vs funded) and, to a lesser extent, on expenses.

Notional interest rates vs returns on investments

- Notional interest rate is an implicit rate of return based on the pension tax rate and demography, which guarantees long-term sustainability of an NDC pension system
- An approximation: an implicit rate of return rate is equal to the wage growth ***g*** plus the rate of labour force growth ***λ***
- In Russia, for the next 40 years' average rate of labour force growth is approximately equal ***λ*** = -1%, so an implicit rate of return, ***g + λ = g-1%***
- Taking into account a higher level of expenses, a funded system must achieve a rate of return at least equal to wage growth ***g*** to provide the same level of pension as PAYGO.

Funded vs PAYGO

- The perceived advantage of a funded pension system over PAYGO is based on the (implicit) assumption that the return on pension funds is higher than the NDC rate of return.

- Consistent assumptions about wage growth and expected rates of return should have been one of the most important issues. Were they?

- No. Generally it was just assumed that the rate of return would be higher than the wage growth rate.

Diversification - 1

Funded and non-funded pillars have different risks. So investments in two pillars provides “security through diversity”.

The state’s implied obligation is to secure the replacement ratio, even if this obligation is not stated in the law. From this point of view PAYGO system - particularly NDC - provide very good asset-liability matching: contributions and notional capital change in accordance to wage growth.

A funded pillar’s assets are not growing in accordance to wage growth; asset-liability matching is much worse.

If funded pillar does not provide higher pensions than NDC pillar, volatility of investment return might lead to a decrease of the state pension system security.

Historical data – developed countries

Country	Period	Average real rate of return		Average real wage growth
		Stocks	Bonds	
USA	1871-1995	6.90%	2.80%	1.50%
UK	1899-2006	5.30%	1.10%	1.00%
Canada	1924-2000	7.00%	2.90%	1.50%

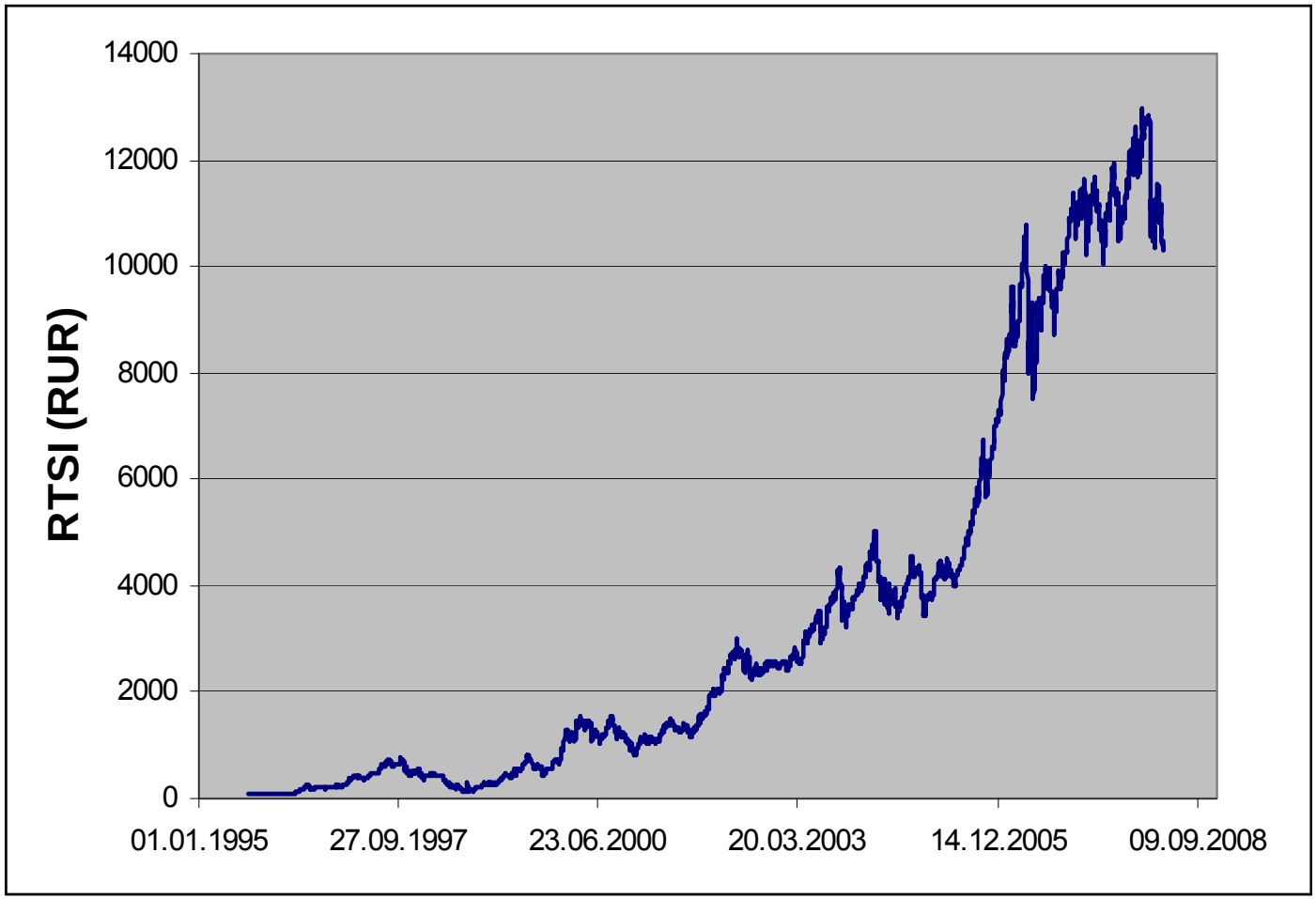
Sources: (1) Alier, M. and D. Vittas (2001). Personal Pension Plans and Stock Market Volatility. In *New Ideas About Old Age Security*, R. Holzman and J. Stiglitz (eds.) The World Bank, Washington, DC.
(2) Barclays Capital
(3) Watson Wyatt website: Long term statistics.
(4) Canadian Institute of Actuaries' website.

Return vs Wage growth

1) Stock market return was comfortably higher than wage inflation
2) Bonds return – just a bit higher than *wage* inflation
3) Real wage growth quite low

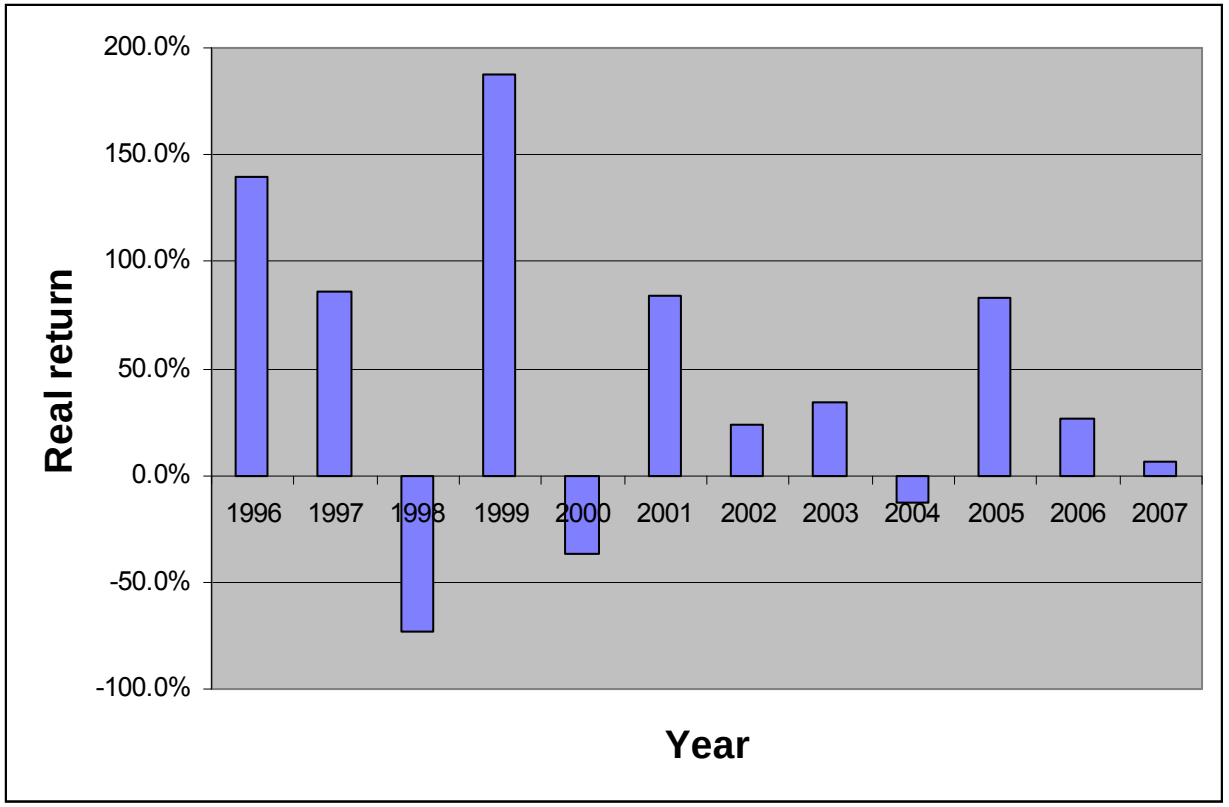
Russian experience

Russian stock market index RTSI, RUR



Source: RTS stock exchange.

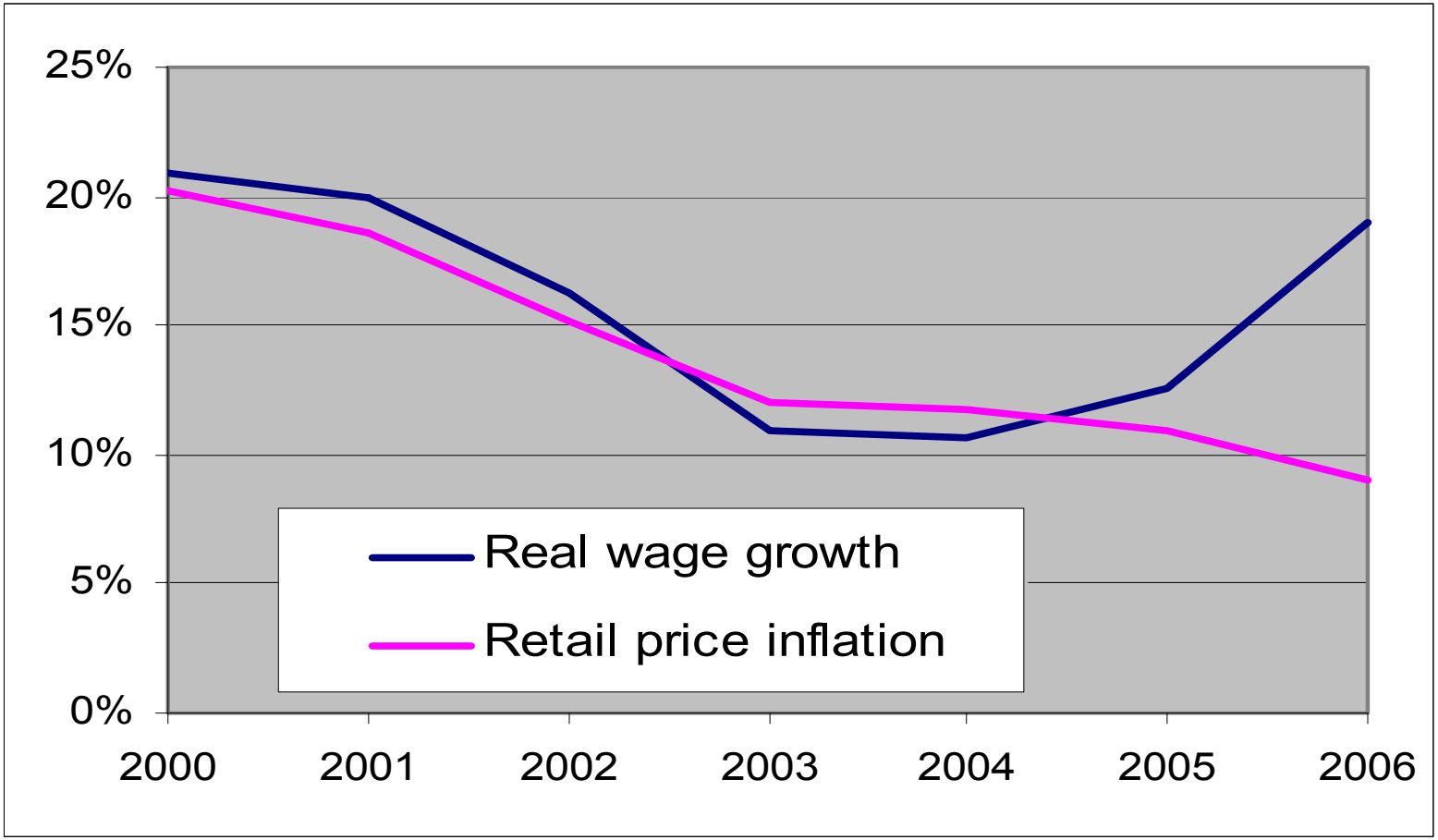
RTSI real rates of return



Average real rate of return for the period from 01.09.1995 till 21.03.2008 was about 18%.

Source: RTS stock exchange.

Wage growth and inflation in Russia



Source: Russian state statistical committee.

Return on Russian obligatory pension savings

- During three years (from 01.07.2004 till 01.07.2007) the average real annual rate of return of all Russian fund managers was equal to 7.2%. Compared with wage growth the return was negative: about -6.0%.
- Public fund manager's (VEB, 95% of total obligatory pension savings) investment results were disastrous:
  - negative average real rate of return (-1.6%)
  - compared with wage growth the return was -13.7%!

Note. In Hungary in the years 1998-2005 the average real rate of return on pension funds was equal to 3.9% a year, whilst average real wage growth rate was 5.3%.

Why?

- Real return on state bonds was negative
- Real return on corporate bonds was very low
  For the main corporations it also was negative or about zero
- Real return on bank deposits was negative
- High real wage growth

Rate of return vs Wage growth

Developed countries:

1) Stock market return was comfortably higher than wage inflation
2) Bonds return – just a bit higher than *wage* inflation
3) Real wage growth quite low

Russia:

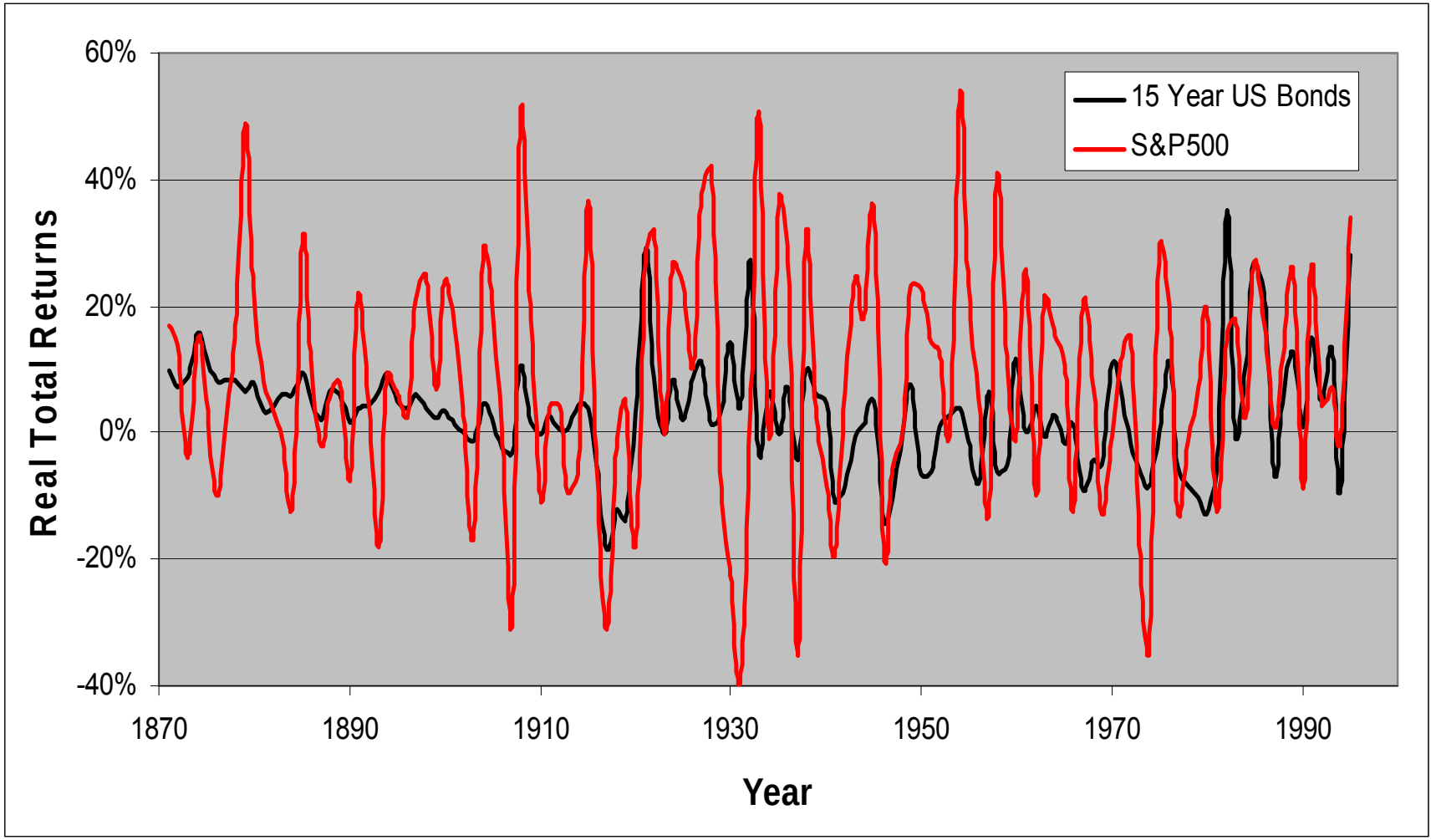
1) Bonds return - just a bit higher than *price* inflation
2) Real wage growth quite high
3) Stock market return – high and very volatile

Volatility of return: Long and Short term views

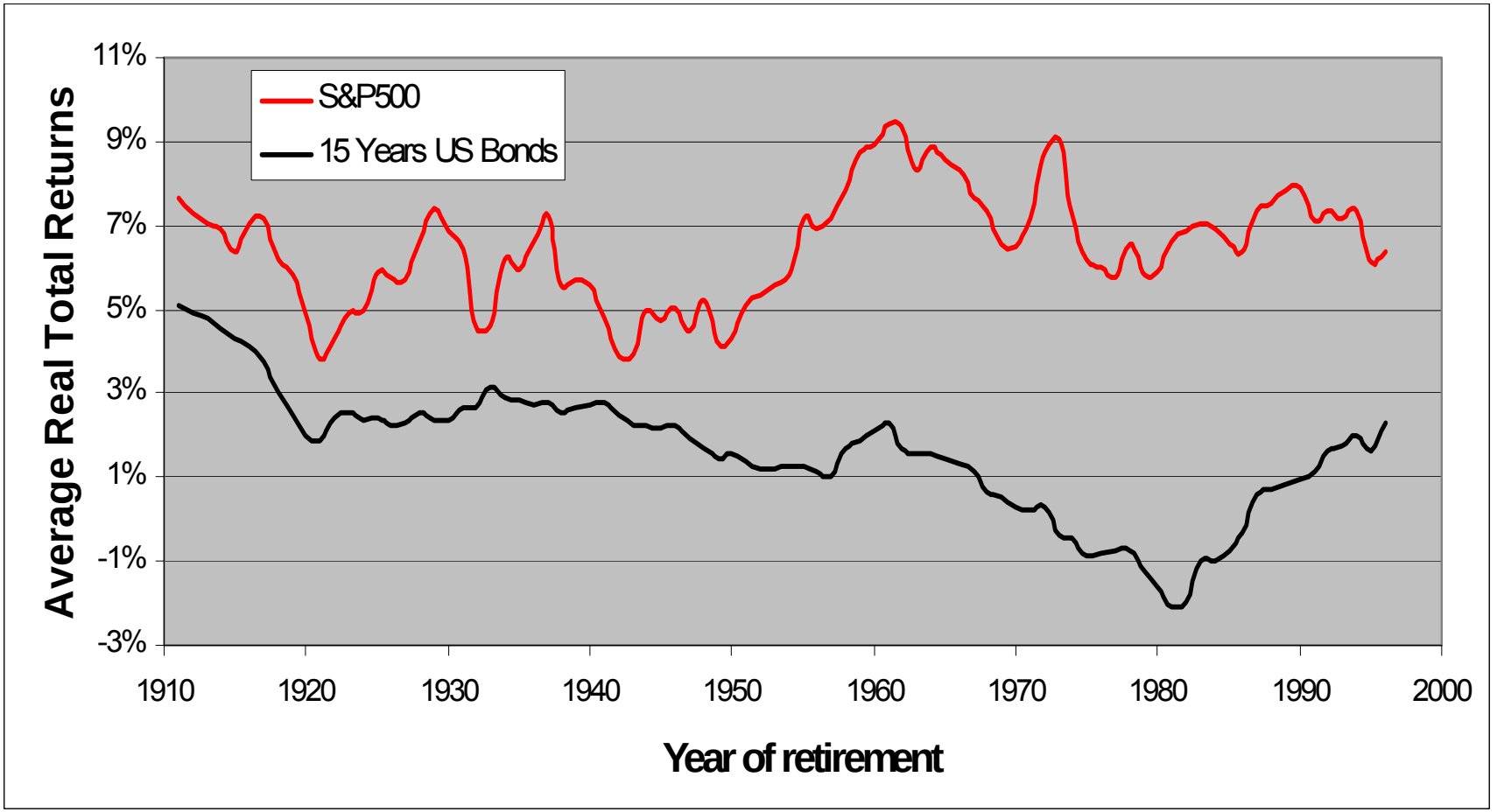
- Long and short term views on investment return volatility can lead to opposite results.
- M. Alier and D. Vittas used historical USA data to investigate the impact of investment returns volatility on replacement rates in the context of DC pension plans.
- The data consisted of real total returns on S&P stocks, 15 Year US Bonds, and wage growth rates in the industry for 125 year periods of time; from 1871 till 1995.
- The data, kindly provided to the author by M. Alier and D. Vittas, are used to illustrate volatility of DC pensions.

Source: Alier, M. and D. Vittas (2001). Personal Pension Plans and Stock Market Volatility. In *New Ideas About Old Age Security*, R. Holzman and J. Stiglitz (eds.) The World Bank, Washington, DC.

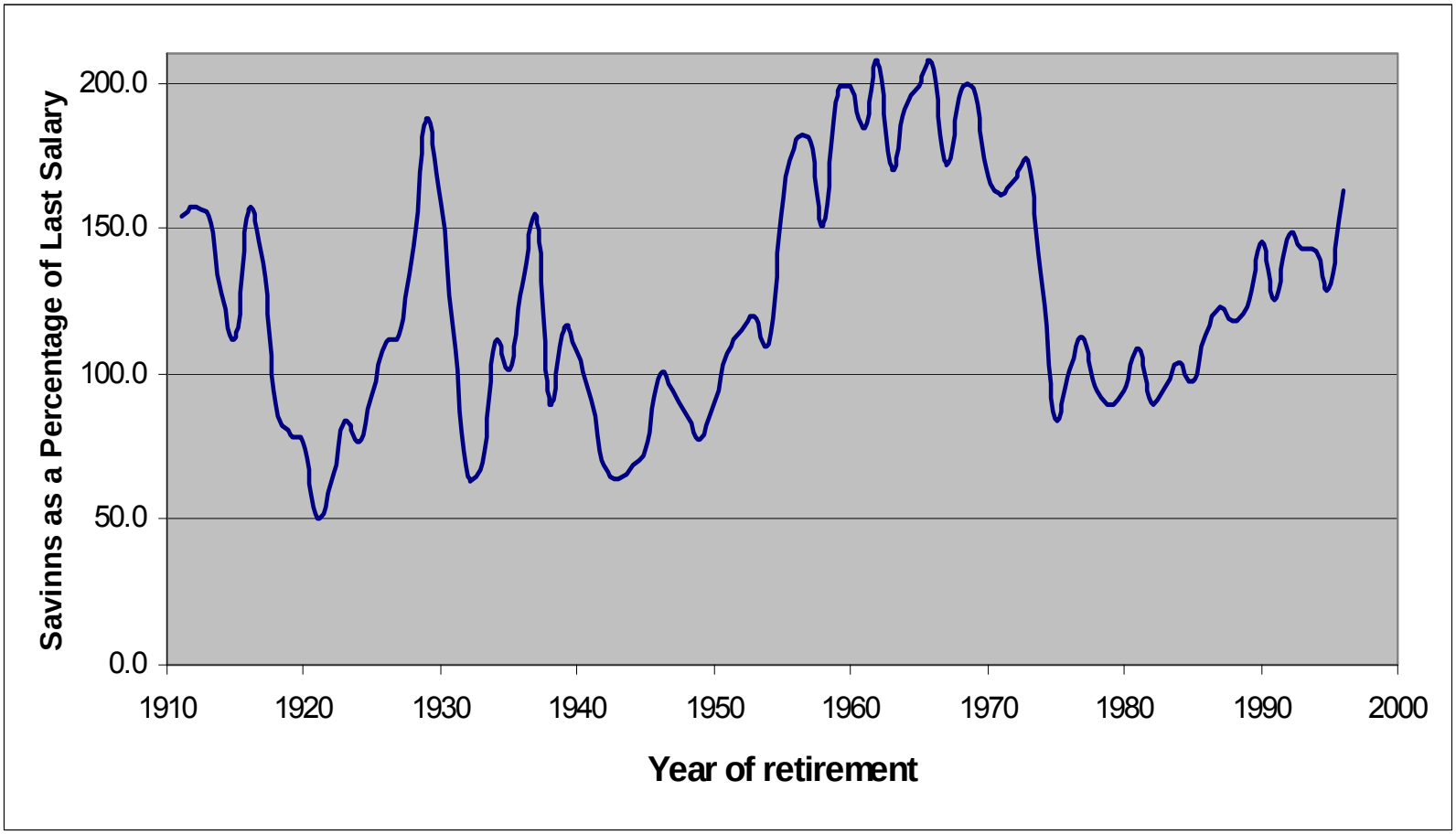
Annual real rates of return, USA



Average annual real rates of return for 40 years savings periods,%



40-year saving as a percentage of last salary
(investments in stocks)



Annual contributions are equal to 10% of an annual wage

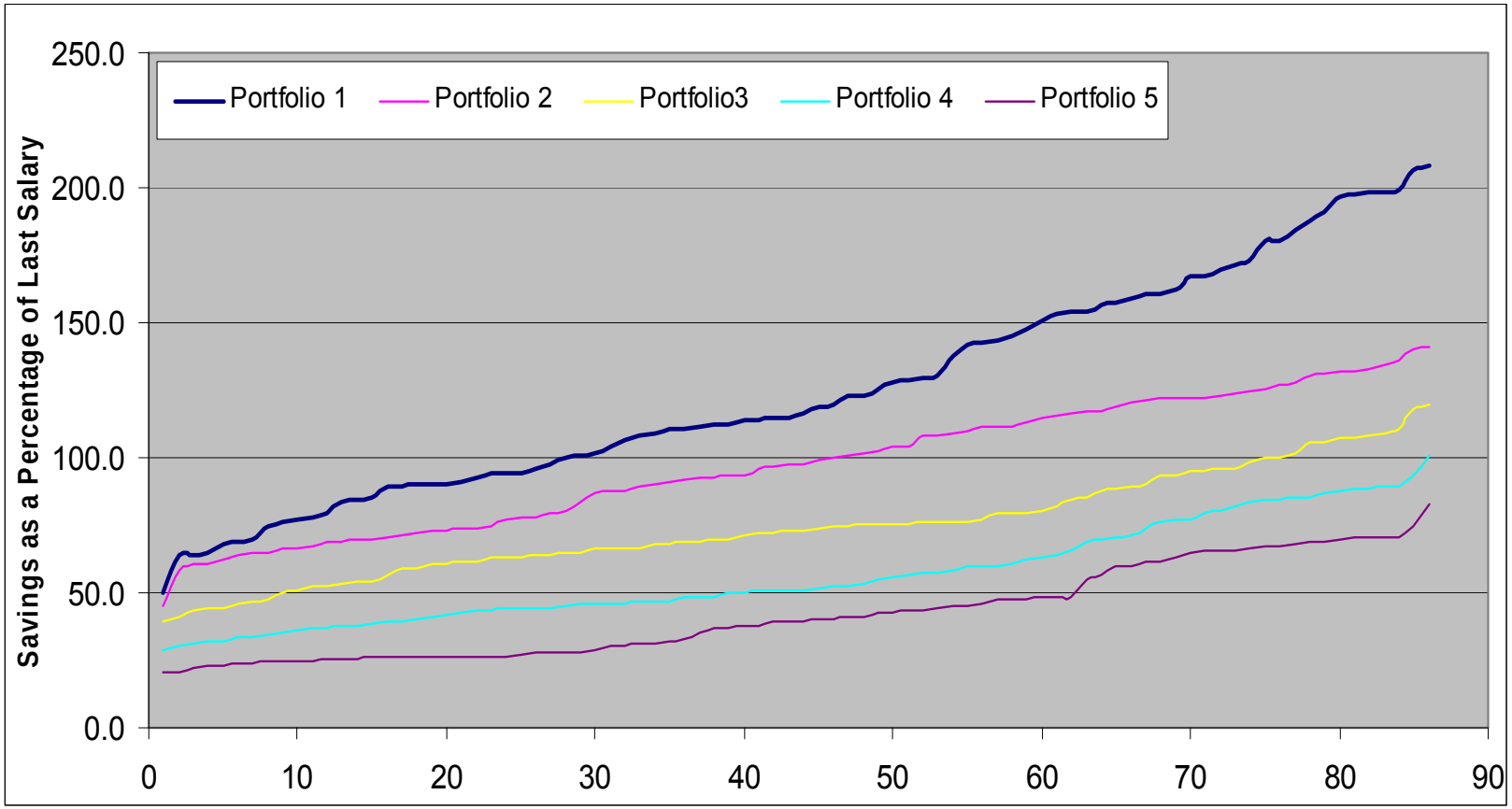
Diversification -2

A usual recommendation to address the volatility of returns is portfolio diversification, by means of which the volatility of returns can be substantially reduced.

Comparison of savings in case of investments in the following portfolios:

Portfolio	S&P Stocks	15 years bond
1	100%	0%
2	75%	25%
3	50%	50%
4	25%	75%
5	0%	100%

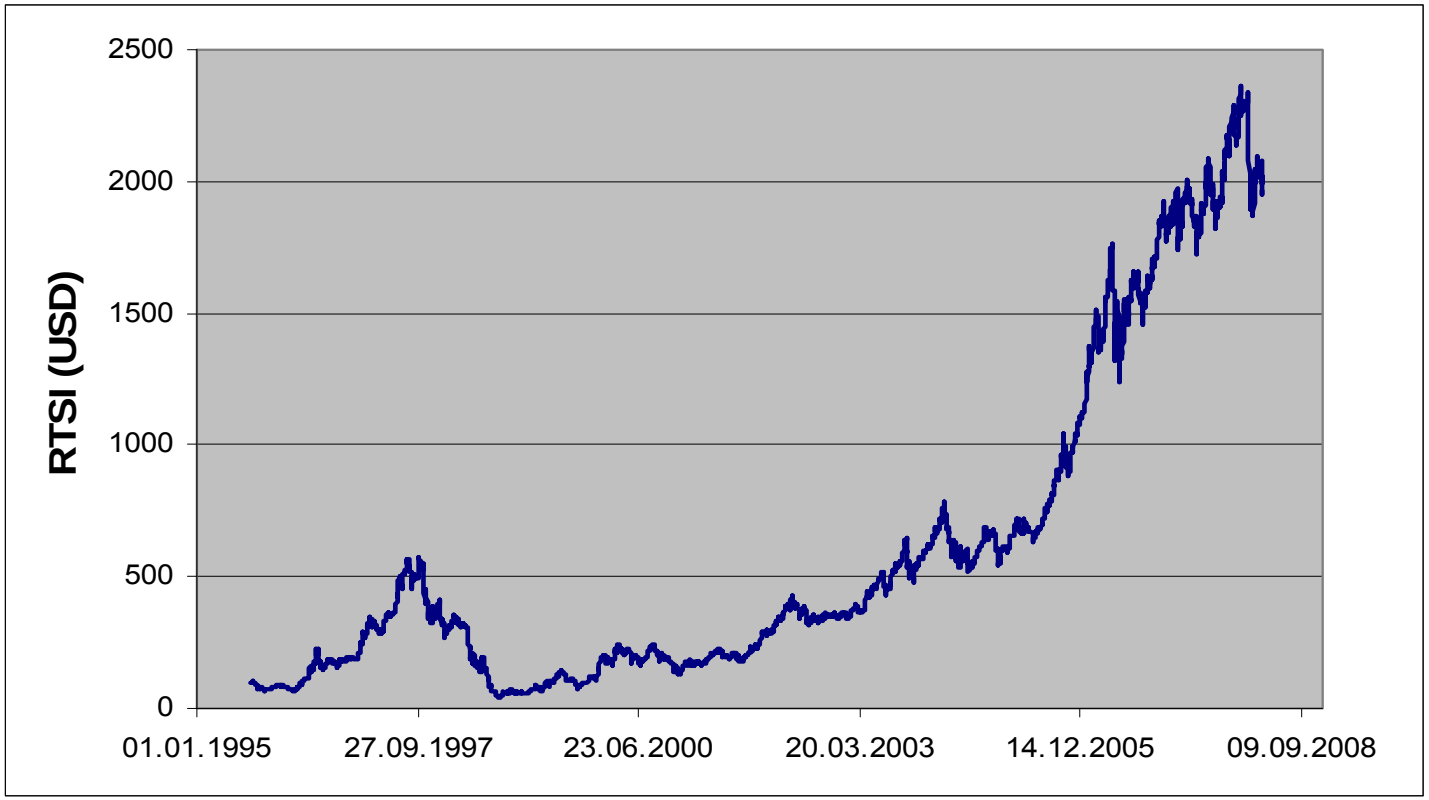
Savings as a percentage of final salary, sorted in ascending order



Diversification - 3

- Developing countries' capital markets are quite small, underdeveloped and highly volatile.
- The usual recommendation to cope with these problems is to invest some part of the assets in developed markets.
- But investments in developed markets would conflict with the hope of getting a higher rate of return by investing in more risky markets during the period of faster growth of a developing economy.

Russian stock market index RTSI, USD



Average *nominal* rate of return for the period from 01.09.1995 till 21.03.2008 was about 27%.

Source: RTS stock exchange.

Investment horizon

- By nature pension investments are long-term. But can a fund manager, whether a monopolist state institution or competing fund managers, have a sufficiently long-term investment horizon?

- For a DC obligatory pension system, the law usually permits change of fund manager *at least* once a year.

  In such a situation fund managers are more concerned about competition with other fund managers, which is mostly based on short-term investment performance.

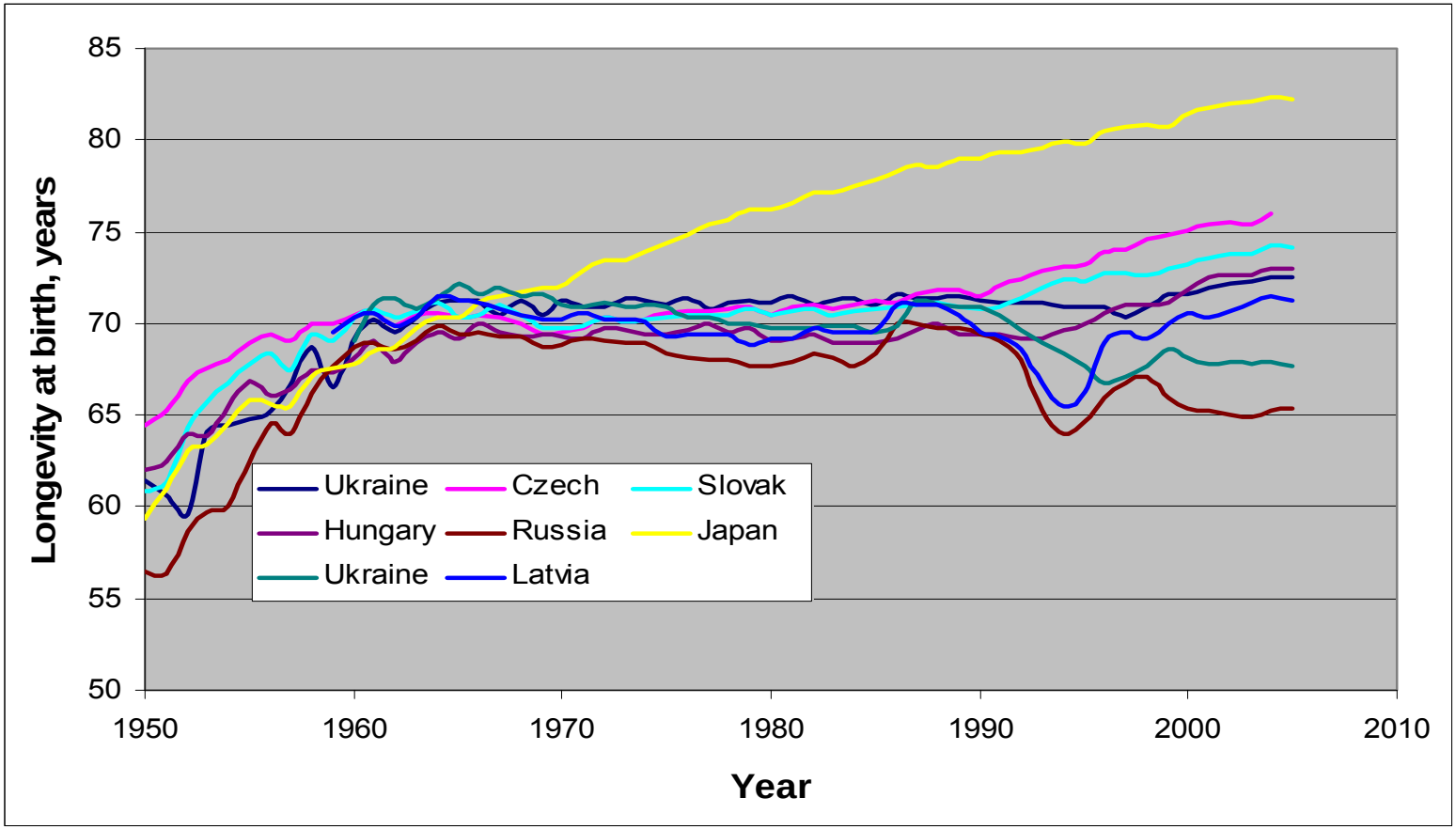
Some topics to consider before introducing obligatory funded pension scheme

- Are there any investments with expected return above wage growth?
- How obligatory funded pension system will cope with High volatility of savings, and particularly of pension amounts in successive years of retirement.
- Diversification through investing part of assets in developed markets might lead to a decrease in expected return.
- Diversification by bonds' investment lead to a decrease in the average expected return.
- Could a fund manager have sufficiently long-term investment horizons?

Both engineers an mathematicians believe in Normal distribution. Engineers think that it is a mathematical theorem; mathematicians think that it is an empirical fact.

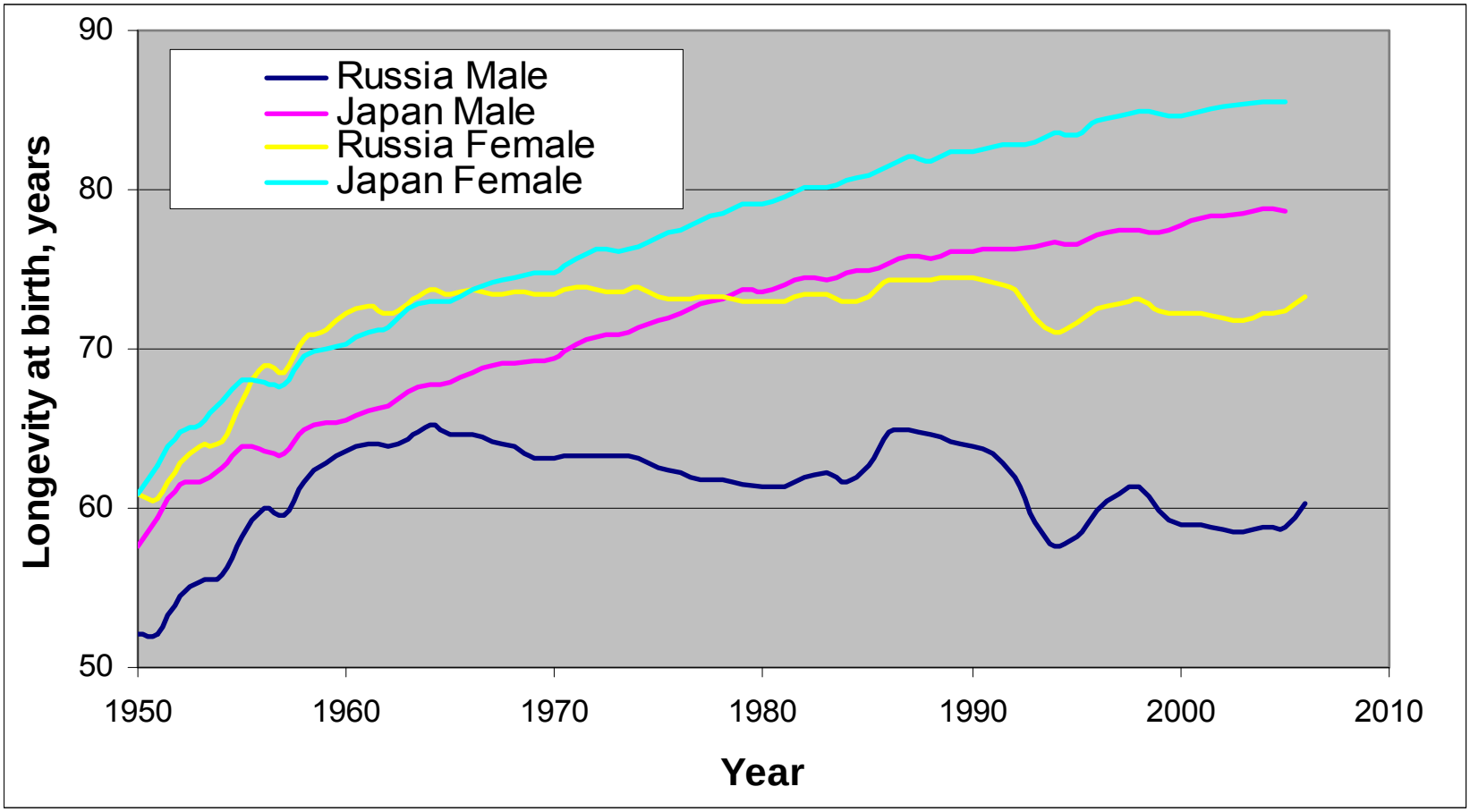
But an actuary is both an engineer and a mathematician.

Longevity at birth in European former socialist countries and Japan



Sources: The Human Mortality Database, www.mortality.org; longevity data in the Russian Federation for the years 1950-1958, were provided by E. Andreev.

Longevity at birth in Russia and Japan



Sources: The Human Mortality Database, www.mortality.org, except longevity data in the Russian Federation for the years 1950-1958, which were provided by E. Andreev.