



sigma

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Mortality protection:
the core of life

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Executive summary

This *sigma* focuses on mortality protection and estimates the “protection gap” – the difference between resources needed and resources available.

Many families are insufficiently covered in the event of the death of the primary wage earner.

This *sigma* presents protection gap estimates for five countries, based on data on income, assets and liabilities; social security benefits; and life insurance holdings.

Each market has a sizeable protection gap.

Table 1
Life assurance protection gaps, by country

This *sigma* focuses on mortality protection, the core product of life insurance. It reviews market developments in six countries and provides estimates of the mortality protection gap – the difference between the resources needed and the resources available to maintain dependents’ living standards after the death of the primary wage earner. Because inadequately protected families often rely on public resources for their welfare, it may be appropriate to adjust public policy to encourage greater use of private-sector-supplied mortality protection. Employers and insurance companies can also help reduce the protection gap.

The primary drivers of demand for mortality protection are age, income, affordability, wealth and the desire to protect income from inflation. Though aggregate demand is driven by these factors, research has shown that there is little correlation between a specific family’s need for protection and its actual purchase of insurance. Many families, especially young ones, have either no mortality protection or inadequate protection. According to one estimate, in the event of a spouse’s death, nearly one-third of secondary earners between the ages of 22 and 39 would suffer at least a 40% decline in the standard of living.¹

This *sigma* quantifies the extent to which people are underinsured by measuring a “life assurance protection gap” for various countries. Specifically, this gap is computed as the present value of future income required to maintain survivors’ current living standards plus the amount needed to meet debt obligations minus the sum of: the present value of future social security payments to survivors plus life insurance proceeds plus one-half of financial assets. Previous Swiss Re research already estimated the protection gap for the UK and Hong Kong. This *sigma* presents estimates for five other countries: Australia, Germany, Italy, Taiwan and the US.

Each of the five markets studied in this report has a sizeable protection gap, ranging from USD 0.2 trillion for Taiwan to USD 10.6 trillion for the US (Table 1). Annual premiums needed to close the gaps range from 0.1%–0.3% of GDP.

Protection gap by country	Australia	Germany	Italy	Taiwan	US
Gap, USD billion	474	2 662	640	234	10 576
Missing annual premium, % of GDP	0.30%	0.30%	0.12%	0.21%	0.23%

Source: Swiss Re Economic Research & Consulting

A public-private partnership could help reduce the protection gap.

To reduce underinsurance, employers could provide workplace education as a benefit to their employees. Insurance industry initiatives and government incentives can support this effort. Clarifying how much coverage is needed and how much support is available from social security, existing coverage and available assets would help each family evaluate its own protection gap. Finally, because governments must sometimes step in to provide welfare, it may be prudent for them to offer employers and workers tax incentives to encourage the purchase of adequate mortality coverage.

¹ B. Douglas Bernheim *et al.*, “The Mismatch Between Life Insurance Holdings and Financial Vulnerabilities: Evidence from the Survey of Consumer Finances”, NBER working paper No. 8455, October 2001.

The plan of the *sigma*.

The plan of this study is as follows. The next section surveys the various mortality protection products and what drives demand for them. Then the report examines developments in selected term life markets. Next, the *sigma* introduces the concept of a life assurance protection gap and estimates its magnitude for five markets. The report then discusses how and why industry and government officials should shrink the protection gap. The final section provides a summary and conclusions.

Term assurance: products and sales drivers

Life insurers have become long-term asset managers.

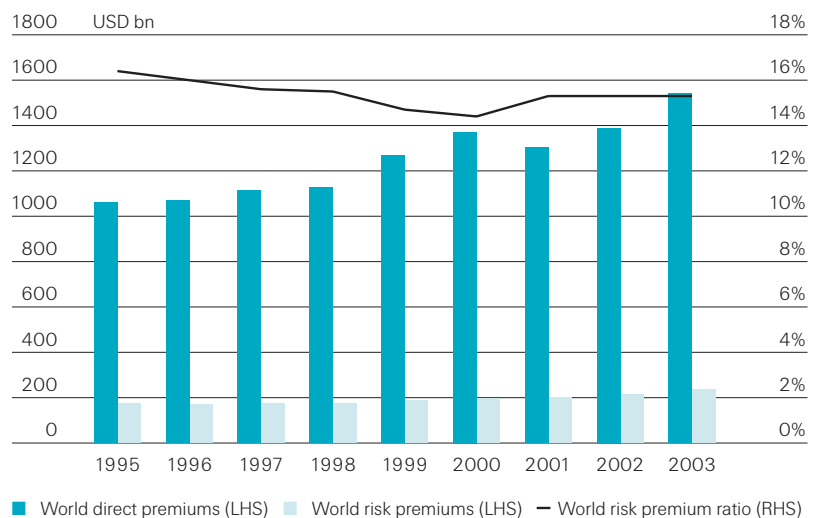
In the 1990s, the share of risk premiums to total premiums fell.

The evolving role of life insurance

The beginnings of life insurance date back to 2500 BC, when stonemasons in lower Egypt formed a funeral fund to provide support in case of death of a member of the fund.² Since then, life insurance has changed completely. Originally, risk protection – providing a benefit after a specific event, such as death – was the focus and main value proposition of life insurers. Today most life insurers consider their core competency to be managing retirement savings. This is reflected by the relatively small share of risk premiums – premiums paid to buy risk protection – out of total global life insurance premiums.

In the second half of the 1990s, the risk premium ratio (the proportion of total life premiums devoted to insuring against a specific event such as death or disability) fell (Figure 1). Booming global stock markets stimulated rapid increases in the sales of single premium products, which include very little risk protection. Sales of savings products fell sharply in 2001. Since then, the risk premium ratio has stabilized at 15%. From 1995 to 2003, total direct premiums grew at a compound annual growth rate (CAGR) of 3.9%, while risk premiums only managed a CAGR of 2.9%.

Figure 1
Global risk protection versus total life premiums, 1995–2003



Notes: Health business written by life insurers is excluded, where data allow

Source: Swiss Re Economic Research & Consulting

Risk protection, including mortality protection, has solid future growth prospects.

Forces now at play are both boosting and depressing sales of savings products. The difficulties facing government pension plans in many industrialized countries mean that individuals will need to purchase more savings products on their own. On the other hand, new regulations could reduce the profitability of savings products, dampening sales. Meanwhile, risk protection – including mortality protection – has strong future growth opportunities because of the large protection gaps in many markets.

² Life insurance, W.v. Wartburg, Swiss commission for insurance exams.

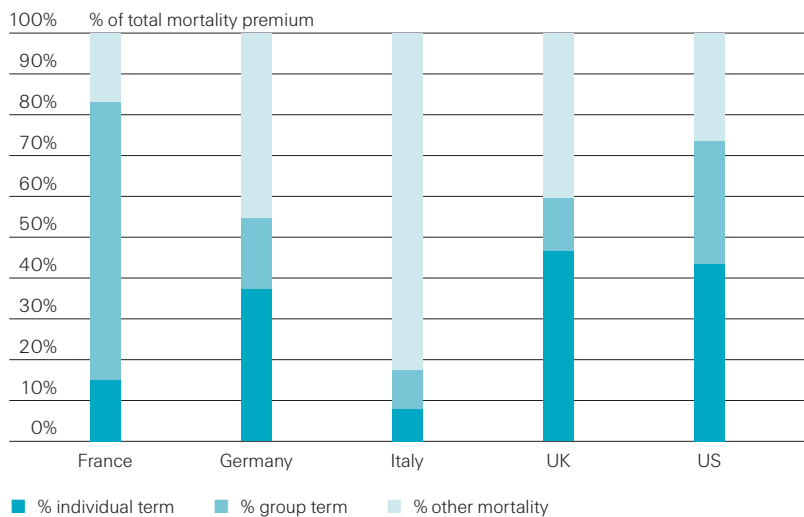
Mortality cover is provided via individual term, group term and combined savings/protection products.

Mortality cover and term life products

This section examines the types of mortality products and their sales drivers, focusing on term products since these products provide the bulk of mortality coverage around the globe. Mortality cover, written in various forms, is provided via individual term, group term and combined savings/protection products:

- Individual term: individual term products, paying a benefit upon the death of the insured.
- Group term: group term is usually employer-sponsored, providing a benefit in case of the death of an employee.
- Combined products have a savings component. Major types include endowment, whole life, universal life and unit-linked policies.

Figure 2
Composition of in-force mortality protection premiums in 2002



Note: US figures in percent of sums assured

Sources: Swiss Re Economic Research & Consulting, CCA, GDV, ISVAP, ABI, AM Best

The types of mortality coverage sold vary considerably across markets.

The composition of mortality coverage varies considerably across markets. For example, the market share of individual term ranges from less than 5% in Italy to over 40% in the UK (Figure 2). "Other mortality" in Figure 2 represents the premium for mortality risk only, excluding savings, in combined savings/protection products. The high percentage of group term life in France is caused by corporate tax regulation favoring employers' contributions towards risk protection of employees. Data providing insight into the mechanics and drivers of mortality cover are usually only available for term life.

This box reviews the wider market for risk protection, which includes mortality protection.

Savings premiums have grown more rapidly than risk premiums.

Mortality protection accounts for 78% of global risk premiums.

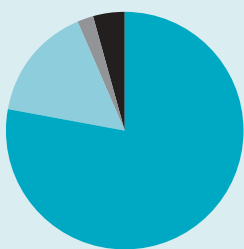
The global market for risk premiums

This box reviews traditional risk products in 16 countries, selected on the basis of data availability, which represented 77% of total risk premiums in 2003.³ There are four main types of risk protection products: mortality protection, disability, critical illness and long-term care. Critical illness is insurance that pays a fixed benefit upon the diagnosis of specified conditions or diseases, or their progress to a specific stage. Four main critical illness conditions account for most claims: heart attack, stroke, cancer and coronary artery bypass surgery. In traditional long-term care insurance, the insurer agrees to pay a predefined regular benefit or lump sum to insureds who satisfy a disablement definition designed to indicate that they are no longer able to care for their basic human needs.

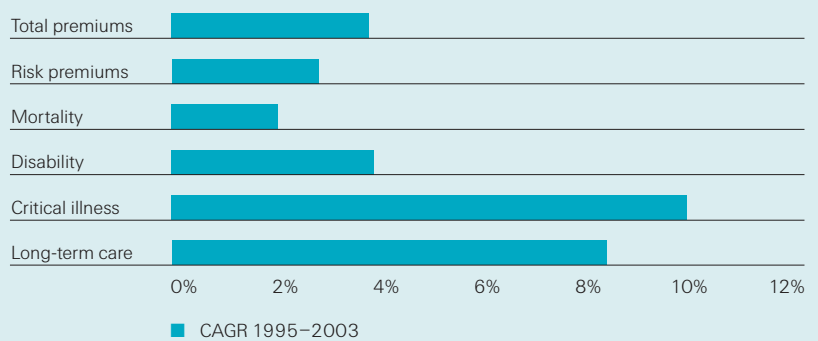
Growth in total premiums, which consist of savings and risk premiums, has outpaced growth of risk premiums over the past nine years, largely due to the strong sales of single premium savings products (Figure 3).⁴

Of the risk lines, the growth of mortality premiums has lagged behind that of other risks, largely due to the falling sales of bundled savings and protection products, eg endowments in Germany, the UK and Japan, and variable universal life in the US. Nevertheless, mortality is the largest risk business, with USD 130.8 billion of USD 167.9 billion, or 78% of total risk premiums. Disability covers are written all over the world and currently account for nearly one-sixth of risk premiums. Critical illness and long-term care have gained share but still account for a small portion of risk premiums. Critical illness is often written in conjunction with mortality cover.

Figure 3
Growth and shares of global risk premiums in 2003



■ Mortality	77.9%
■ Disability	15.6%
■ Critical illness	2.2%
■ Long-term care	4.3%

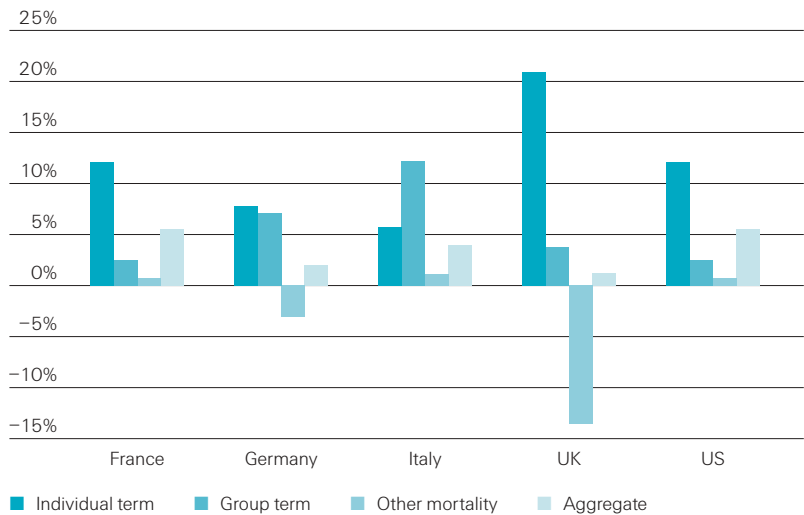


Source: Swiss Re Economic Research & Consulting

³ Belgium, Germany, India, Israel, Italy, Japan, Luxembourg, Mexico, the Netherlands, Portugal, South Africa, South Korea, Spain, Switzerland, United Kingdom, United States.

⁴ Total premiums, as well as risk premiums, exclude medical expense and accident & health business when the data allow for this.

Figure 4
Compound annual growth rates (CAGRs)
1999–2002, inflation adjusted, in local
currency, of mortality premiums in force



Notes: Italy – CAGRs for group term and other mortality are for 2000–2002 only
UK – Growth rates are for 2002 only
US – CAGRs are of sums assured

Source: Swiss Re Economic Research & Consulting estimates, ABI, AM Best, FFSA, GDV, ISVAP

A shift towards unbundling of risk and savings has favored individual term products.

In all markets, a shift towards unbundling, or separation of mortality protection from savings, can be observed. Pure mortality protection products, particularly individual term, have experienced very strong growth, attributable in part to a decline in term premium rates. In contrast, the premium growth for “other mortality” products has fallen or stagnated (Figure 4), due to a shift of savings away from bundled products, such as endowments, into pure savings products – single premium bonds in the UK; annuities in Germany and the US.

What drives sales of mortality protection?

Age, income and affordability help explain the demand for mortality protection.

Several factors help explain demand for mortality protection, including age, income, affordability and macroeconomic variables.

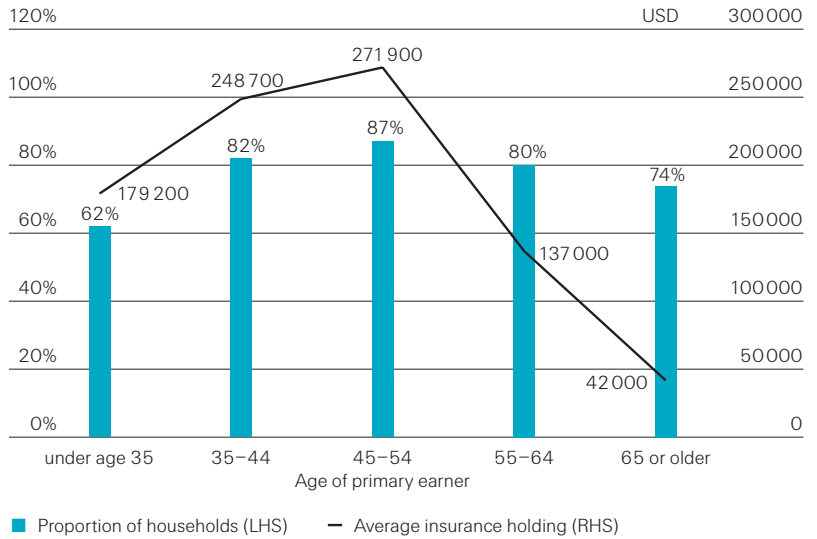
Household demand for mortality protection varies over the life cycle.

Household demand

Demand for mortality protection is closely tied to the life cycle and family income. As the primary earner grows older, he or she initially becomes more likely to buy mortality protection. In the US, for example, 87% of families whose primary earner is 45–54 years old own term insurance, as opposed to 62% of households whose primary earner is younger than 35 (Figure 5). Similarly, the average insurance coverage for families whose primary earner is 45–54 years old is USD 271 900 versus USD 179 200 for families whose primary earner is under 35. Beyond age 55, the level of insurance held declines

sharply because children have left home, some families have saved enough and do not require insurance, and mortality protection grows more expensive with age. Nonetheless, because people are living longer, there will likely be growing demand for insurance among people aged 55 and over.

Figure 5
US mortality protection by age of primary earner, 1998



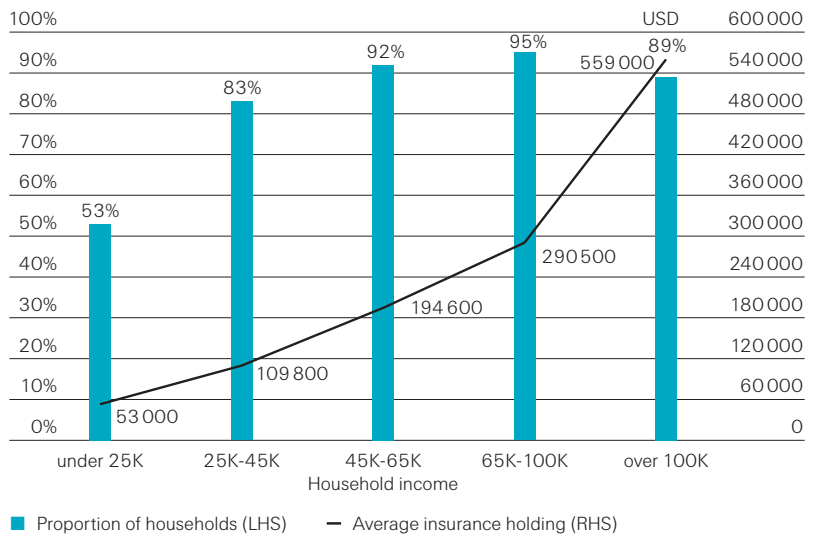
Source: LIMRA International, "Trends in US Household Life Insurance Ownership", 2000, Tables 7 and 8

Demand for mortality protection is also highly correlated with income.

Household demand for mortality protection is also closely related to income. This close correlation (Figure 6, line) reflects the role of mortality protection – to replace, in the event of death, some portion of a wage earner’s income.⁵ Income also heavily influences the decision of whether to hold any mortality protection at all. More than 90% of families with incomes between USD 45 000 and 1 00 000 hold mortality protection, but nearly half of families with income under USD 25 000 do not.

⁵ This relationship is reinforced by the common practice of providing employees with term insurance equal to some multiple of their earnings. Pensions for spouses and dependents are also common in markets such as the UK.

Figure 6
US mortality protection by level of household income, 1998



Source: LIMRA International, "Trends in US Household Life Insurance Ownership", 2000, Tables 4 and 5

Despite these patterns, there is little correlation between a family's need for insurance and how much it holds.

Despite these patterns with respect to age and income, research shows that the extent of life insurance coverage is *poorly correlated* with underlying financial vulnerabilities. One study compares the mortality coverage held by 1033 families with the level of coverage they require according to a detailed financial model. The study finds no correlation between insurance needs and holdings.⁶ Table 2, which summarizes some of these results, divides the population into four similar-sized groups whose estimated insurance needs are nil, low (between 0 and 4 times income), moderate (4 to 8 times income) and high (over 8 times income). Of the four groups, the families with the highest insurance needs were the most likely to be uninsured: 29% of these families had no mortality protection. Moreover, a comparison of columns (5) and (6) shows no clear relation between the level of insurance needed and the level held.

Table 2
Characteristics of households with different levels of insurance requirements

Fraction of households	Degree of insurance needs	Ratio of recommended insurance to household earnings	Percent uninsured	Mean ratio of recommended insurance to household earnings	Mean ratio of actual insurance to household earnings	Median age of spouse (years)
21%	None	0	17%	0.0	2.5	56
27%	Low	0 to 3.99	13%	2.1	2.1	46
25%	Moderate	4 to 7.99	10%	5.7	2.8	38
27%	High	8 or more	29%	15.0	2.9	31

Source: B. Douglas Bernheim *et al*, "The Mismatch...", Table 4, panel B

⁶ B. Douglas Bernheim *et al*, "The Mismatch..."

Many families are vulnerable due to a lack of mortality protection.

The observation that holdings do not match up with needs, consistent with the industry expression that “insurance is sold and not bought”, means that the basic financial needs of many families remain unaddressed. According to the study quoted above, young families are especially vulnerable. In the event of a spouse’s death, nearly two-thirds of secondary earners between the ages of 22 and 39 would suffer at least a 20% decline in their standard of living and nearly one-third would suffer at least a 40% decline in living standard.

Affordability influences demand for protection ...

Affordability

Affordability also influences the demand for mortality protection. A recent study looking at US demand for one-year renewable term insurance estimates that the price elasticity of demand for mortality coverage is -0.5 .⁷ This means that for each 10% decrease in premium rates, there is a 5% increase in sums assured. This relationship is important because the price of mortality protection has fallen significantly in some markets over the past few years.

... as does the level of mortgage debt.

Mortgage debt

In markets where mortgage insurance is commonplace, such as the UK, the level of mortgage debt outstanding is a key determinant of life insurance demand. It follows that in these markets home prices and homeownership rates also help explain the demand for life insurance.

Income per capita and inflation explain differences in demand for mortality protection among countries over time.

Macro factors

Country-specific economic, demographic and cultural factors can also influence the demand for mortality protection. A recent World Bank study examined 68 countries from 1961–2000 to see which of these factors drive demand for life insurance. It found that income per capita and inflation are the most robust predictors of life insurance consumption across countries and over time.⁸ In particular, each 10% increase in real per capital GDP was associated with a 19% rise in life insurance in force. Each percentage point increase in inflation reduces life insurance in force by 1.4%. Interestingly, the study found that a variety of demographic variables (including dependency ratios, life expectancy, education level, urbanization), income distribution and social security expenditures *do not* consistently explain differences in demand for mortality protection.

⁷ Mark V. Pauly *et al.*, “Price Elasticity of Demand for Term Life Insurance and Adverse Selection”, NBER working paper No. 9925, August 2003.

⁸ Thorsten Beck and Ian Webb, “Economic, Demographic, and Institutional Determinants of Life Insurance Consumption Across Countries”, *World Economic Review* 17, May 2003, pp 51–88.

Term product types and design

Most mortality protection is sold through term products.

As previously noted, most mortality protection around the globe is provided by term insurance. Term policies cover a specific time period and promise to pay benefits only if the insured dies during the policy term. They are either purchased as an individual cover (individual term) or provided through employment as a benefit (group term). Some term insurance is purchased by businesses to protect against the financial consequences of the loss of a key person. The broad categories of individual term covers are defined according to the amount paid on death, the premium basis and the degree of segmentation of risk characteristics.

Term products are level and non-level.

Most term policies sold worldwide provide a death benefit that is fixed for the life of the policy. In some cases, policyholders may have the option to increase the death coverage, often contingent upon a specified event, such as a marriage or birth of a child. Non-level term policies have a face amount which changes over time. Increasing term policies, in which the death benefit increases each year, are rarely sold as an independent product, but rather they are usually provided as a rider to a level term policy. One example is the cost-of-living-adjustment rider, which automatically adjusts coverage for inflation each year. Decreasing term policies are typically used to protect a mortgage or other loan whose balance declines over time as payments are made.

Term products are renewable (usually with an increasing premium) or level-premium.

Renewable policies give the policyholder the option to extend the contract at the end of the original term without reference to the insured's insurability status at renewal time. The premium, although level for a given term, increases with each renewal based on the age of the policyholder. One-year policies, called yearly-renewable term (YRT), are the most widely sold. Level-premium term policies are contracts offered at a guaranteed rate throughout the term of the policy, which typically varies from five to 30 years.

Policies are written and priced in several underwriting classes.

Changes in mortality experience, extensive mortality research and the competitiveness of the market have prompted insurers in many countries to develop different underwriting classes. Separate pricing based on smoker/non-smoker (SM/NSM) status is common in most markets, in addition to traditional differentiators of age and gender. In more developed term markets such as the US and Canada, further classification of a number of underwriting risk categories has been developed, eg preferred plus, preferred, standard, and sub-standard. Preferred risk underwriting involves pricing policies based on the buyers' risk characteristics and expected mortality. The most attractive rates are offered to those in good health, with healthy lifestyles.

Term products are simple and easily compared.

Term products have a relatively simple design compared to other types of life insurance. The commodity nature of these products makes it easy for buyers to compare prices. This makes term markets more competitive, prompting insurers to reduce prices and offer additional features that add value. A common option is convertibility of the policy from term insurance to another type of policy with an investment component.

Riders are offered to add value.

Common riders in term products are waiver of premium on disability, a child/spouse rider (adds coverage for child/spouse), accidental death benefits, income protection in case of disability and critical illness. In addition, there are accelerated death benefit riders, which provide a set percentage of the total death benefit in the event of a terminal illness that the insured is expected to survive for less than a year. Newer features of the accelerated benefit provide coverage in the event that the insured becomes critically ill, disabled or in need of long-term care.

Table 3
Term products in the US, UK, Germany, Italy and Australia

	US	UK	Germany	Italy	Australia
By amount of benefit	Level benefit. Some decreasing.	Level benefit. Decreasing for mortgage covers.	Level benefit. Decreasing for mortgage covers. Increasing available, but index-linking is not a feature.	Level benefit. Decreasing for mortgage covers.	Level benefit. Decreasing for mortgage covers. Increasing benefit with inflation index-linking is common.
By premium	Level premium products dominate. Typical term is 10, 15, and 20 years. YRT is less than 10% of total premiums.	Level premium products. Typical term is 25 years (to match the usual duration of a mortgage). YRT is hardly offered.	Guaranteed level premium contracts dominate.	Level premium products. Typical term is 10–15 years.	YRT is typical. A small portion is written as level premium.
Underwriting categories	Preferred life. Majority of business is written in the preferred plus and preferred risk classes.	SM/NSM is universal. Preferred life is limited.	SM/NSM is offered but not popular. Preferred life is new.	SM/NSM. Preferred life newly introduced with limited success.	SM/NSM
Riders/features	Typical riders are: waiver of premium on disability, child/spouse inclusion, accelerated death benefits, accidental death, return-of-premium.	Joint life ⁹ is common. Menu protection plans offer a selection of additional benefits: CI, income protection, waiver of premium.	Joint life ⁹ is common. Bonuses may reduce rates by up to 50%. Alternative bonus system adds bonus to sums assured.	Accidental death, critical illness, terminal illness.	Trauma (critical illness) and total permanent disability are common. Premium discounts for benefit size, supplementary lives, policy persistency.

YRT= Yearly renewable term; CI = Critical illness; SM/NSM = Smoker/nonsmoker

⁹ A *joint life first to die* policy is payable upon the death of either of the insureds. A *joint life survivorship* policy is payable when both of the insureds have died.

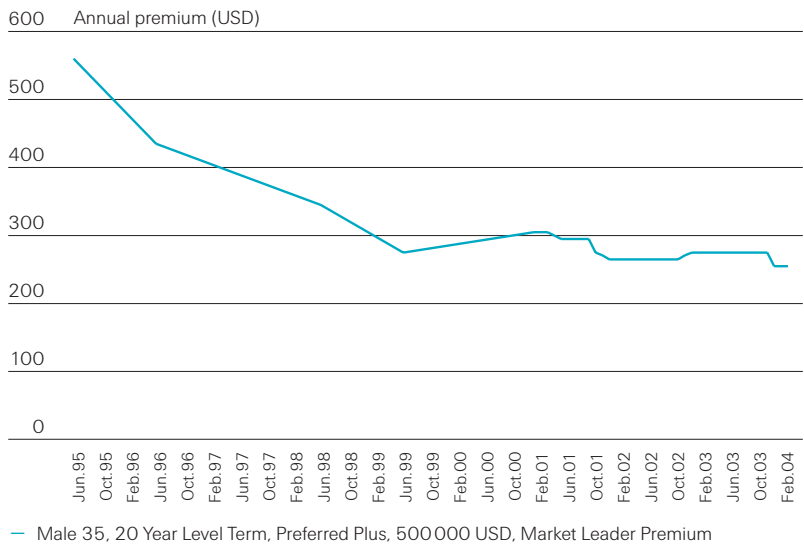
In the UK and the US, the price of mortality protection has fallen substantially since the mid-1990s.

Trends in term pricing

Because of the commodity nature of term products, pricing is often the fundamental basis for competition and a top strategic issue for insurers. Over the past decade, mortality premium rates in markets such as the UK and the US have fallen substantially. Several factors have driven the decline:

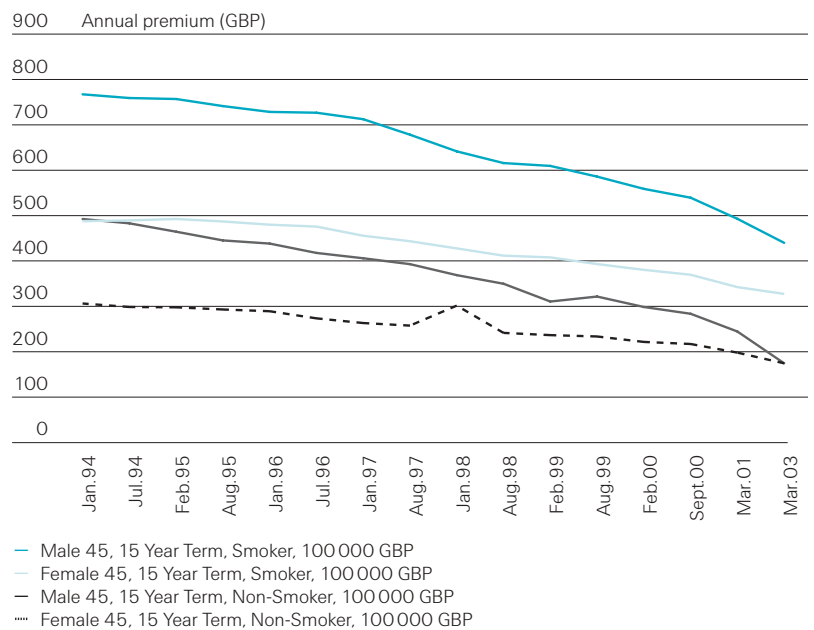
- *Declining mortality rates:* continuing declines in mortality rates, by about 1% per year over the last 30 years, have prompted insurers to update pricing assumptions and reduce rates.
- *Wider use of reinsurance:* cession rates in the Anglo-Saxon markets have increased substantially since the early 1990s. Direct writers have been able to transfer a large part of the mortality risk on their books to reinsurers on attractive terms. Some companies in the US and the UK currently cede as much as 90% of the mortality risk from term business.
- *Expense reductions:* in the competitive term market environment companies have aggressively sought ways to decrease their expense ratios. Expense savings from implementing information technology advances or expanding the scale of operations have been used to lower rates. Firms have also sought ways of reducing expenses by using underwriting tools provided by reinsurers.

Figure 7
Term prices in the US, 1995–2003



Sources: CompuLife, Swiss Re internal data

Figure 8
**Term assurance rates in the UK,
 1994–2003**



Source: The Exchange

Distribution

Most term insurance is sold face-to-face.

Based on the premise that term insurance is sold and not bought, insurers rely heavily on product marketing and distribution for top-line growth. Most policies are sold face-to-face through affiliated and independent agents. Banks are an important distribution channel in markets where bancassurance is well developed (eg Italy) and sales of mortgage covers are widespread (eg the UK). In the US, only a small portion of term sales is channeled through banks, because of the complexity of the underwriting process and the lack of experience of bank staff in selling mortality protection.

Alternative channels account for a small share of distribution.

Alternative channels such as direct mail and phone sales account for a very small share of distribution. In the UK and the US, the Internet is widely used as a source of information about products and rates, but not as a sales channel.

Overview of selected term life markets

This study examines term insurance markets in six advanced economies: Australia, Germany, Italy, Taiwan, the UK and the US.

To provide insights into the trends and drivers of mortality protection from term products, this study considers a geographically diverse group of advanced economies: Australia, Germany, Italy, Taiwan, the UK and the US. These six countries account for approximately half of world life premiums, half of world Gross Domestic Product (GDP) and 9% of world population.¹⁰ Five of these countries have per capita GDP in the order of USD 25 000–38 000 and long-run real per capita growth of between 2% and 3% per year (Table 4). The sixth, Taiwan, has a far lower per capita GDP (USD 12 707), but its per capita GDP has grown at an impressive 6.1% annual rate since 1960.

Table 4
Basic macroeconomic indicators

Country	Population in millions 2003	GDP per capita in USD 2003	Real GDP per capita, CAGR 1960–2003
Australia	19.8	25 558	2.1%
Germany	82.3	29 358	2.6%
Italy	57.5	25 681	2.9%
Taiwan	22.6	12 707	6.1%
United Kingdom	59.2	30 367	2.1%
United States	290.2	37 870	2.2%

Sources: Global Insight, Oxford Economic Forecasting

There is wide variation in mortality coverage from term insurance in these markets.

In all markets except for Taiwan there has been a trend towards unbundling of savings and protection products, and term insurance has grown strongly over the past few years. Mortality coverage per capita from individual term insurance varies widely across the countries, from a high of USD 40 544 in the US, to a low of USD 3 531 in Germany (Table 5). Germany and particularly Italy have very small individual term markets, with premiums amounting to 0.11% and 0.02% of GDP, respectively. In the US, the UK and Australia, term products are widely sold and penetration is higher, ranging from 0.21% to 0.25% of GDP. Taiwan does not have a pure term insurance market since insurance payable only upon death is not popular with consumers. Moreover, the tax code encourages the sale of combined savings and protection products.

Table 5
Individual term insurance statistics, 2002

Country	Sums assured per capita, USD	Number of policies per 100 people	Annual premium per capita, USD	Premiums as % of GDP
Australia	12 219	15	50	0.25
Germany	3 531	6	25	0.11
Italy	n/a	n/a	4	0.02
United Kingdom	24 594	17	67	0.25
United States	40 544	63	77	0.21

Note: 2001 data for Australia. For the UK, sums assured include combined savings/protection products

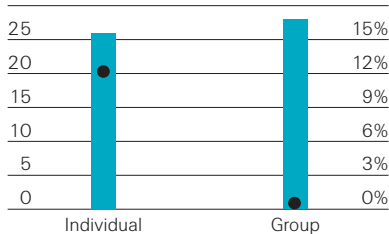
Sources: AM Best, Association of British Insurers, German Insurance Association (GDV), ISVAP (Italy), DEXX&R (Australia), Swiss Re estimates

¹⁰ Swiss Re *sigma* 8/2003, "World insurance in 2002: high premium growth in non-life insurance".

Term is a key market in the US.

US term insurance, 2002

USD bn



■ In-force premium (LHS)
● CAGR 98-02 (RHS)

Note: For individual term, growth rate is of sums assured

Sources: AM Best, Swiss Re ER&C estimates

Preferred risk level-premium products prevail.

Recent term sales were affected by regulatory changes and 11 September.

Group life insurance is a mature line, accounting for a third of all sums assured.

United States

In the US, individual term insurance is a key market since term products have become the preferred choice for death protection coverage. The market has been very competitive and dynamic in all its segments. Over the period 1998–2002 individual term insurance had a CAGR of 12.1%, while total sums assured grew by 5.5% annually. Due to this rapid growth, individual term products accounted for 43% of all sums assured in 2002, compared to 34% in 1998. Given the decline in mortality prices, premium revenues grew at a somewhat slower pace than sums assured. Data on individual term premiums are not available, but new sales data from LIMRA surveys show that, since 1990, term has grown more rapidly than individual life products as a whole (Figure 9).

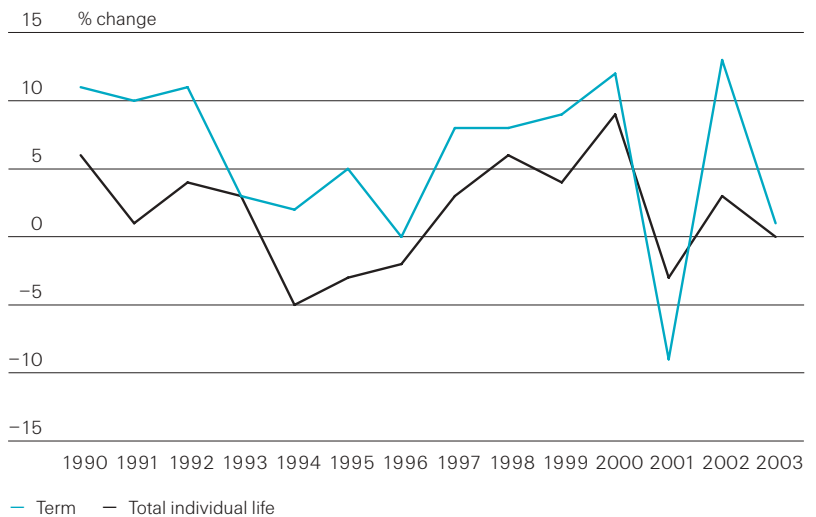
Driven by competition and the need to offer attractive low-cost products to consumers, the term product landscape has shifted rapidly. In the early 1990s, yearly-renewable policies dominated sales and accounted for almost two-thirds of policies. Currently the top-selling products are level premium with a term of ten to 20 years, while yearly-renewable products account for less than 10% of policies sold. Preferred risk underwriting prevails. More than half of new premiums are written in the preferred plus and preferred classes.¹¹

Growth of term sales accelerated twice in recent years – in 2000 and 2002 (Figure 9). The 2000 increase in sales was triggered by the introduction of Regulation XXX (effective 1 January 2000), which increased reserve requirements for long-term level-premium products. Sales increased tremendously at the end of 1999 because of widespread anticipation that Regulation XXX would cause premium rates to rise, and peaked in the first half of 2000 as the backlog of policies sold in 1999 was processed. The sharp increase in term sales in 2002 (13%) is believed to have been caused by the effects of 11 September on consumers’ perceptions about mortality risk and the importance of owning life insurance.

From 1998–2002, group term premiums grew at a real CAGR of 1%, lagging significantly behind individual term growth. Group life insurance is a mature line, accounting for about a third of total sums assured. About 90% of full-time employees in medium and large private businesses and state and local governments participate in group term life plans. Participation for employees of small private businesses is lower, around 60%.

¹¹ LIMRA International, Inc.

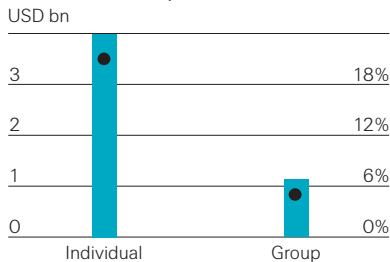
Figure 9
US annualized premium growth – term vs total individual life sales, 1990–2003



Source: LIMRA International, Inc.

New sales in the UK have doubled since 1998.

UK term insurance, 2002



■ In-force premium (LHS)
 ● CAGR 98-02 (RHS)

Note: For individual term growth rate is for year 2002

Source: ABI

Europe

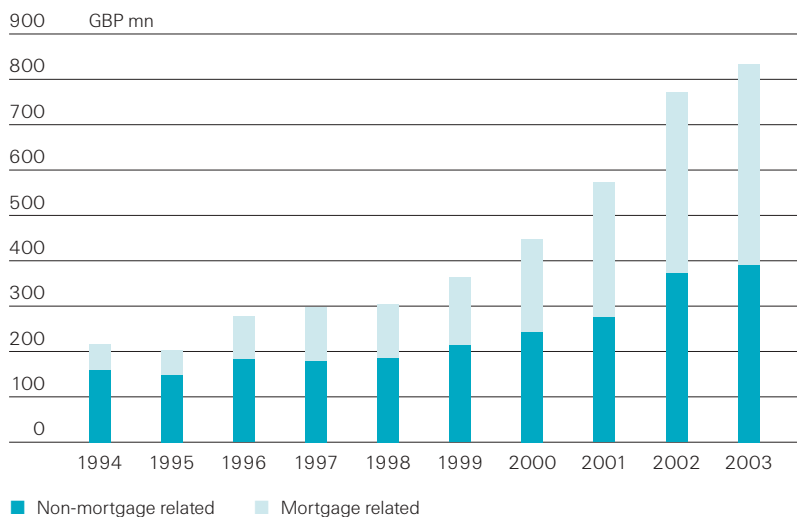
United Kingdom

The individual term assurance market in the UK has grown rapidly in recent years, with new sales doubling since 1998 and now exceeding two million new policies per year. Meanwhile, new sales of bundled investment and protection products such as endowment assurance and whole life policies have fallen. This is due to an increasing consumer preference for separate investment and protection products. Bundled products are perceived as costly and inflexible.

New business premiums grew at a real CAGR of 25% from 1998–2002.¹² Mortgage activity stimulated growth of term assurance, making the market more dependent on mortgage covers (Figure 10). Another driver of new business growth has been a lack of regulation in the market. New regulations for the protection markets, planned for January 2005, will likely increase the costs of advising on and of writing new business, and therefore impede growth.

¹² Swiss Re UK

Figure 10
The housing and mortgage markets have been instrumental drivers of new term assurance sales in the UK



Source: Association of British Insurers

Consumers shop around for the best deal and policy exchanges are common.

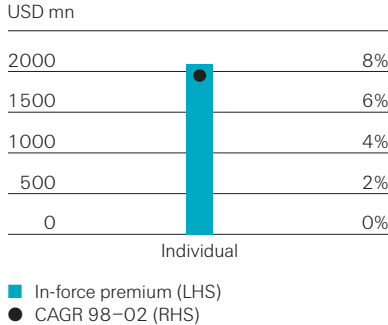
The strong figures for new sales growth are inflated due to policy exchanges. Anecdotal evidence suggests that a good part of the new business growth may actually be the rebroking of existing policies driven by the decline in mortality premium rates in recent years. Lower rates have prompted consumers to shop around for the best deal. Gathering information has also become easier with the wider use of the Internet. Commissions are front-end loaded, typically 90–100% of the first year premium, creating incentives to rebroker existing policies. Data on in-force life assurance also include, but do not separate, policies with an “accelerated” critical illness or terminal illness benefit rider, where payment is made on the first event – death, critical or terminal illness. In the UK, if the policyholder suffers a critical illness, in most cases the life cover element of the policy is lost.

Group coverage is commonly provided through employer-sponsored plans.

To encourage staff recruitment and retention, UK employers commonly provide a benefits package for employees. This may include life assurance cover. Set up under discretionary trusts, these arrangements are usually insured by the trustees. Some larger schemes, such as the scheme covering UK Civil Servants, are self-insured. For many, group arrangements represent the only life cover they have. Most arrangements allow insurers to quote terms that provide automatic entry and cover for all qualifying employees, except very large earners, irrespective of their health and whether they have dependents.

The term market in Germany is very small, partly because of the strong social security system.

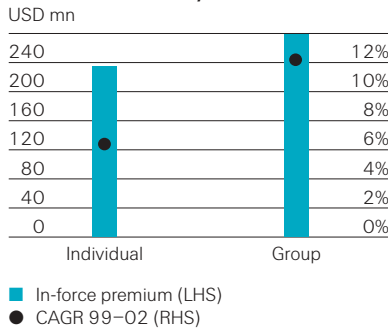
Term insurance in Germany, 2002



Source: GDV

Mortality protection from term insurance is very low in Italy.

Term insurance in Italy, 2002



Source: ISVAP

Germany

The German term market grew at a real CAGR of 7.8% from 1998 to 2002.¹³ Despite its strong growth, the market remains small. Term products are not widely sold and density is very low. In 2002, individual term premiums per capita were only USD 25. As in other countries, the market is very competitive and companies that market directly have an advantage by offering lower premium rates. Most insurers operate a with-profit bonus system based on their mortality experience. Bonuses are applied either to premium rates (for an up to 50% discount), or as an increase in the death benefit. Some companies offer separate rates for smokers and non-smokers, but the concept of preferred life is generally not popular in the German market. There is very little group life insurance, since survivors' pensions are an integral part of the social security scheme.

Italy

Of the six markets covered in this report, Italy has the lowest mortality protection from term insurance. In 2002, individual and group term premiums per capita were only USD 4. From 1999 to 2002, individual and group term premiums in Italy grew at a real CAGR of 6.4% and 12.2%, respectively.¹⁴ Mortgage covers generate a big part of the individual term premium volume, although only 10–20% of all mortgages are protected by a term policy.

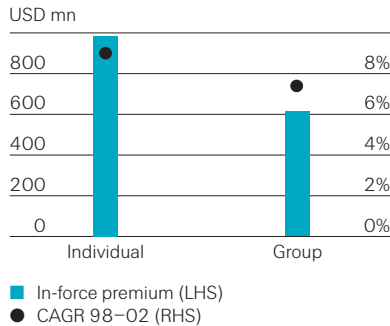
In the mid-1990s, the life insurance market was liberalized, leading to the development of new products and a decline in premium rates. Smoker and non-smoker differentials are available and preferred life products were recently introduced, but many Italians are intolerant of medical underwriting requirements. Group coverage is not universally available. Some companies have insurance schemes that offer life cover as a benefit, usually equal to five to six times the annual salary.

¹³ German Insurance Association (GDV)

¹⁴ ISVAP

The individual term market in Australia has grown robustly.

Term insurance in Australia, 2002



Note: Group risk includes permanent disability and trauma

Source: DEXX&R

Companies have lowered rates and developed new product features.

Level-premium products are not widespread.

Group life insurance is a common feature in the superannuation schemes.

Asia and Oceania

Australia

The individual term market in Australia has grown rapidly in the last few years. From 1998–2002, new business premiums grew by a real CAGR of 9.8%.¹⁵ As in the US and the UK markets, sales of individual term products have benefited from a shift in consumer preferences to buying mortality protection separately from investment. This shift resulted from the declining popularity of whole life and endowment products because of concerns about their inflexibility, lack of transparency and poor investment returns.

Term sales in recent years have benefited from the development of bancassurance and the increased role of banks in selling mortgage covers. The booming housing market has driven 10% to 20% annual increases in outstanding home mortgage debt. This has fueled sales of mortgage protection policies although, as in Italy, the take-up rate is modest (15–20%). Mortgage-related term business is expected to be an area for future growth, especially for companies owned by banks.

The term market is very competitive, especially for products distributed through independent intermediaries, and this has driven premium rates down in the past few years. To attract consumers, companies have developed additional benefits and a wider range of combined features. Products have become more complex. Riders such as critical illness, terminal illness, total permanent disability and automatic indexation of the death benefit for inflation are becoming widespread. Companies offer premium discounts for supplementary lives attached to the policy, for policy persistency, for larger covers and as an introductory incentive in the first year.

Most policies sold are yearly-renewable term. Some companies offer level-premium products, but they comprise a small portion of the business. Underwriting is differentiated by smoker and non-smoker classes, with a wide variation in discount rates across companies. As in the UK market, commissions are front-end loaded (90–100% of the first year premium, 10% for renewal), which creates strong incentives for agents to remarket products every two years after the initial commission has been earned. Falling premium rates exacerbate this problem.

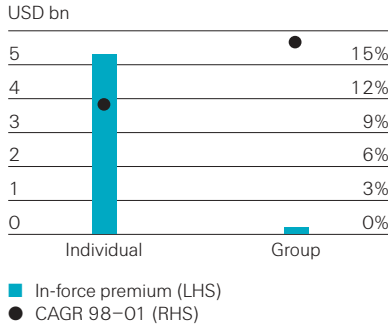
Group risk premiums in force grew at a real CAGR of 7.4% from 1998–2002, but new business grew more slowly, at a CAGR of 1.7%.¹⁶ Group life insurance is a common feature in the superannuation schemes, which are compulsory for both employers and employees. Group policies typically include a total permanent disability rider with coverage equal to the death benefit.

¹⁵ DEXX & R

¹⁶ Group risk premiums include total permanent disability and trauma (critical illness). According to Swiss Re estimates, premiums for death cover are about two-thirds of group risk premiums.

The life insurance market in Taiwan is highly regulated.

Insurance against death in Taiwan, 2001



Source: The Insurance Institute of the Republic of China

Taiwan

Life insurance products and pricing in Taiwan are strictly regulated. This has restricted the ability of insurers to introduce new products. Underwriting is less developed than in other markets. Separate rates are offered only for males and females and, of course, according to age. The main products sold are traditional life with guaranteed yields.

For individual and group insurance against death, total premiums have grown at a robust after-inflation CAGR of 11.5% from 1998 to 2001.¹⁷ In Taiwan, personal accident insurance is more popular for death protection than term insurance. The Taiwanese are generally not inclined to purchase insurance payable only at death. Because taxation encourages sales of products with a savings component, term is usually sold as part of a package, bundled with personal accident and medical reimbursement coverage. Group insurance is not universally available and covers about 44% of the working population, with a typical benefit equal to two to three times the annual salary. Labor insurance, a part of the social security system, provides employee mortality coverage equal to 15 to 45 months of wages, up to a limit of TWD 42 000 per month.

¹⁷ The Insurance Institute of the Republic of China. Data on term insurance premiums only are not available.

Life assurance protection gap

This analysis examines the life assurance protection gap for five countries.

The primary after-death objective is to maintain the standard of living of dependents.

The protection gap is resources needed less resources available, given the after-death objectives of the consumer.

Resources needed include income replacement, retirement and other major expense needs, and debt and tax obligations.

Resources available include social security payments, financial assets and life insurance coverage.

As previously noted, many families are either uninsured or inadequately insured against the death of their primary earners. To measure this shortfall, we use the concept of a *life assurance protection gap*: the difference between the resources needed and the resources that would be available to maintain a family's current living standard should its primary earner die.¹⁸ This concept can be applied, in aggregate, to a country's citizenry. Previous Swiss Re research has examined the protection gap for the UK and Hong Kong.¹⁹ This analysis estimates the protection gap for five other countries: Australia, Germany, Italy, Taiwan and the US.

Defining the protection need for individuals

The primary stated objective of mortality protection, according to the Chartered Life Underwriters (CLU), is to maintain the current living standard of dependents.²⁰ Using reasonable assumptions, this must be translated into concrete objectives for income, assets and debts.

The protection gap is defined as:

Protection gap = resources needed – resources available

Often this calculation is done on a gross basis, before taxes, and this study will adhere to that convention. An analysis of the after-tax protection gap is beyond the scope of this analysis.

Protection gap calculation: resources needed and available

There are three components to the calculation of the resources needed

- The income required to maintain the current standard of living for the spouse, children and other dependents. The income is, of course, a flow, so this is converted into a lump sum value by calculating its present value. This can then be easily compared to the other resources, the stock of debt and assets.
- Retirement needs, university education needs for children and other major expenditure needs.
- Meeting debt and tax obligations, such as paying off mortgages, car loans and inheritance tax.

There are three components to the calculation of the resources available

- Social security payments for survivors, converted into the present value of this future flow of income.
- Financial assets and retirement savings.
- Life insurance coverage and employee benefits provided by outside insurance schemes.

¹⁸ In this report, the term "protection gap" will refer specifically to the life assurance protection gap. Protection gaps regarding other risks, such as disability, are beyond the scope of this study.

¹⁹ The Swiss Re UK research was similar to work by Oliver, Wyman & Company on the "savings gap", done on behalf of the Association of British Insurers. The Oliver, Wyman study identified and measured an annual "savings gap" between what UK consumers need to save for a comfortable retirement and what they actually save. For more details, see Oliver, Wyman & Company, "The future regulation of UK savings and investment: Targeting the savings gap", September 2000.

²⁰ CLU guidelines call for the replacement of at least 60% of family income. See Kenneth Black and Harold D. Skipper, *Life and Health Insurance*, 13th edition, 2000, p 354.

For each country, the protection gap calculation is based on the characteristics of workers with dependents, scaled up by the number of these workers.

The income replacement multiplier measures how big a lump sum is needed to replace someone's wages upon death.

The income replacement calculation is based on several assumptions.

The multiplier varies with age from 0 to 15 and typically averages about 10.

Specific computation of the protection gap in this sigma

The protection gap calculation is based on national averages – average income for workers with at least one dependent, average social security payments to survivors, average life insurance coverage, etc.²¹ Once the protection gap has been calculated for the average worker with dependents, the country's protection gap is calculated using the total number of these workers.

The primary resource needed: income replacement

When a wage earner dies, family members can replace his or her earnings by investing a lump sum in a portfolio of investments – such as bank certificates of deposit, bonds and stocks – that generate a stream of income payments. Typically, the required lump sum is stated as a multiple of the deceased wage earner's income, referred to as the *income replacement multiplier*. If, for example, a lump sum investment of USD 400 000 is needed to replace the earnings of someone whose annual wage is USD 40 000, the income replacement multiplier is ten (= 400 000/40 000).

In this *sigma*, the income replacement multiplier is calculated assuming that:

- The income stream of the deceased need only be replaced until the time he or she would have reached age 65.
- The income to be replaced is based on the deceased's salary at time of death.
- This income to be replaced rises with inflation, assumed to equal the consensus long-run forecast of inflation for each country.
- The income replacement is partial. Two-thirds of income is replaced through age 36. For ages 36 to 64, the proportion to be replaced declines linearly to 50% at age 64.

These assumptions allow us to specify the exact stream of cash payments needed through age 65. Next we must determine how large a lump sum is needed to generate this stream of cash flows. This lump sum is computed by discounting the stream of payments by the average expected return for the major asset classes: stocks, bonds and bills, weighted by the relative sizes of holdings in each of these asset classes.

Once these cash flows have been computed, the multiplier is calculated as:

- Multiplier = lump sum required/income at time of death

The multiplier, estimated based on these assumptions, is calculated for the following age categories for the US: under 35, 35–44 and 45–54, using the average multiplier for all ages within each group. For the other countries, an average multiplier for working people younger than 65 with dependents is used. The average multiplier calculated in this manner is typically close to 10.

²¹ In the US, where household level data are available, the analysis looks at households. For Australia, Germany, Italy and Taiwan, where household data are not available, the analysis focuses on individuals.

It is assumed that 50% of financial assets need to be retained for retirement needs, children's education, etc.

These assumptions provide for some retention of capital, not a liquidation of all of it or a further building up of capital.

Debt and tax obligations must also be met.

The resources available are the present value of social security payments, 50% of assets and all types of life insurance coverage.

Because this study excludes some segments of the population, it underestimates the actual protection gap.

Basing calculations on average needs and resources understates the protection gap.

Other resources needed

Since the income replacement is assumed to end at age 65, retirement needs are not included. Also, for many families, there may be other obligations, such as the cost of university education for the children. To meet these needs, it is assumed that the household is allowed to keep 50% of all financial assets and retirement savings, rather than use all assets to generate a supporting income.

This method, which allows for retention of 50% of assets, does not provide for additional assets to be built up as inheritance to the dependents. This is a compromise between assuming all wealth at the time of death is used to provide future income for the dependents and assuming that all wealth is retained as part of the inheritance for the children.

Finally, most households have debt obligations for mortgages, car loans, credit card debts, etc. In addition, there may be inheritance taxes. All of these needs are assumed to be fully met, adding to the total protection needed.

Resources available

The resources available in case of death will be added up as follows:

- The present value of social security payments for survivors, calculated in the same manner as for income replacement
- 50% of financial assets and retirement savings²²
- Life insurance coverage:
 - sums assured of private life insurance including savings products with reserves if not considered under assets
 - individual and group mortality protection covers
 - other forms of survivor benefits such as self-insured group schemes and employer benefits granted upon death of employee²³

The method probably underestimates the true gap

There are at least two reasons why this calculation might underestimate the true protection gap:

- The analysis focuses only on working people with dependents, the population group most in need of death protection. To the extent that it ignores the protection needs of individuals without dependents and those outside the workforce, the analysis understates the true protection gap.
- The protection gap calculations are based on the average protection needs (income replacement and debt repayment) and average resources (social security, financial assets, life insurance) of families and individuals. This approach underestimates the protection gap because it implicitly assumes that the surplus of those whose resources exceed their protection needs will offset the protection gaps of others. In reality, the protection gap is the sum of the individual gaps of only those with a protection shortfall. (See box: *Incorporating the distribution of asset and insurance holdings in the US protection gap calculation*).

²² This includes liquid assets like bonds, stocks, mutual funds, cash etc, and those retirement funds owned by the deceased, with the survivors as the beneficiary. Non-financial assets such as real estate, cars etc, are not included in resources available because it is assumed that the family wants to retain these assets after the death of the primary earner.

²³ Some employers provide survivor benefits directly instead of through insurance.

US life assurance protection gap as an example

The US mortality protection gap can be estimated using government and industry data.

For the US, data aggregated by age is used.

Calculations based on age-specific averages produce a protection gap estimate of USD 10.6 trillion.

The US estimates build on data from four external sources: the Census Bureau; the Survey of Consumer Finances conducted by the Federal Reserve Board; the Social Security Administration; and LIMRA International.²⁴ The appendix lists the figures used to estimate the aggregate protection gap for the US and other countries.

Ideally, the protection gap should be measured family by family. This is not feasible, however, because the available data are highly aggregated and there is no way to match up the relevant information from the various sources. Instead, we consider different groups, as defined by the primary earner's age. Each of the key variables is available on this basis for the US, allowing us to develop a profile of families in each age bracket. (For other countries, because comparable data are unavailable, the protection gap estimates are based on individuals, not families).

Protection gap estimated using age group averages

To illustrate the analysis based on age group averages, consider US families whose primary earner is between 35 and 44 years old (Table 6, third column). These families have an average income of USD 77 100, roughly 60% of which must be replaced in case of death. Social security survivor benefits would provide USD 18 500 a year, filling some of the gap, yet the total protection needed would still be a sizeable USD 596 900. Household financial assets and life insurance coverage help address this need, but families in this age group still face an average estimated protection gap of USD 352 500. All told, these 18.8 million families have an aggregate protection gap of USD 6.6 trillion (18.8 million x USD 352 500). Similar calculations for families with primary earners under 35 and aged 45–54 yield protection gaps of USD 2.4 trillion and USD 1.5 trillion, respectively.²⁵ Summing these estimates gives an aggregate US protection gap estimate for the three age groups of USD 10.6 trillion.

²⁴ Ana M. Aizcorbe et al., "Recent changes in US Family Finances: Evidence from the 1998 and 2001 Survey of Consumer Finances", *Federal Reserve Bulletin*, January 2003, pp 1–32; LIMRA International, "Trends in US Household Life Insurance Ownership: The Changing Mix in Coverage", 2000.

²⁵ The youngest families have less of a gap than the 35-to-44-year-olds because they have less income to replace. The 45-to-54 demographic group has less of a gap than the 35-to-44-year-olds because it has fewer years until retirement, more assets and more life insurance.

Table 6
US protection gap by age cohort

Age of primary earner	under 35	35–44	45–54	Total
Household income, USD	44 200	77 100	93 200	
Household income multiplier	13.9	11.5	6.3	
Social security survivor benefits, USD	17 200	18 500	14 100	
Social security multiplier	20.3	15.9	10.2	
Protection needed, USD*	266 200	596 900	439 800	
0.5 x Financial assets, USD	22 100	53 100	114 350	
Debt, USD	45 800	75 800	75 600	
Protection needed, net of financial assets and debt, USD	289 900	619 500	401 100	
Life insurance coverage	145 500	267 000	309 700	
Protection gap, USD	144 500	352 500	91 400	
Number of households	16 832 000	18 818 000	16 540 000	
Aggregate protection gap, USD trillion	2.4	6.6	1.5	10.6
Aggregate protection gap, allowing for unequal wealth & coverage, USD trillion	3.9	9.3	5.4	18.6

Notes: *Protection needed, which is before accounting for assets and liabilities, is computed as: Household income x household income multiplier – annual social security survivor benefits x social security multiplier. Totals may not sum due to rounding.

Sources: Census Bureau; Ana M. Aizcorbe *et al.*, "Recent Changes in US Family Finances: Evidence from the 1998 and 2001 Survey of Consumer Finances", *Federal Reserve Bulletin*, January 2003, pp 1–32; LIMRA International, "Trends in US Household Life Insurance Ownership: The Changing Mix in Coverage", 2000; Social Security Administration, and SR Economic Research & Consulting estimates.

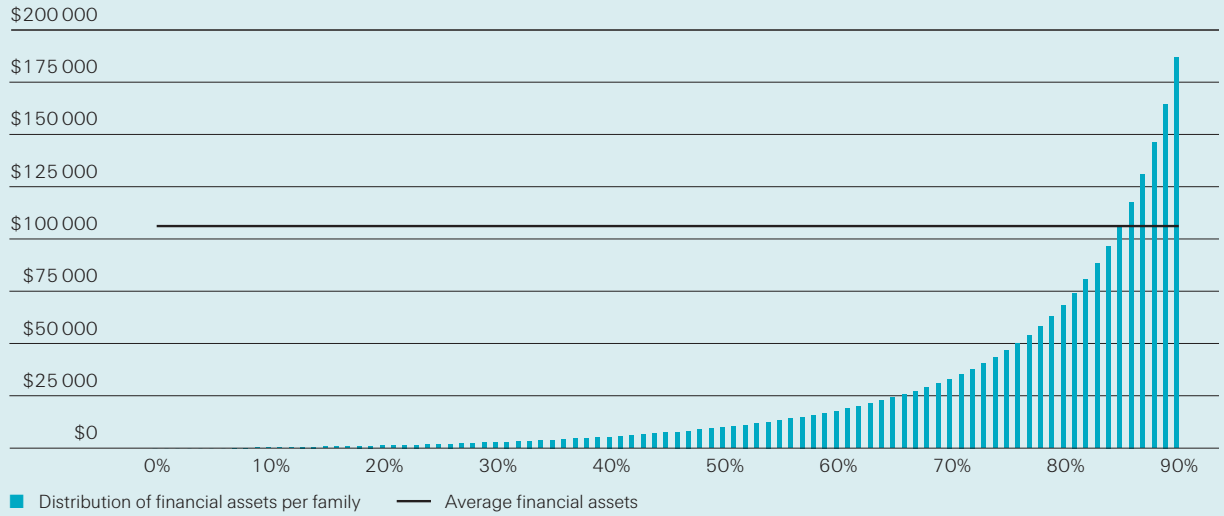
Measuring the protection gap using age-specific averages produces an underestimate.

Incorporating the distribution of asset and insurance holdings in the US protection gap calculation

The previous analysis, because it looks at averages instead of the financial situations of individual families, understates the true magnitude of the protection gap. To see why, consider for example the financial asset holdings of households whose primary earner is aged 35–44 (Figure 11). The first method assumes that each family has USD 106 200 in financial assets – the average for the group. Yet in reality, more than 80% of families have less than this amount. Indeed, a third have less than USD 5000 in financial assets and 7% have none at all. Holdings of mortality protection, though more equally distributed, still vary widely (Figure 12). Three-quarters of the families hold mortality protection below the average level of USD 267 000. Nearly one in five hold no mortality protection at all.²⁶

²⁶ The proportions of households headed by 35-to-44-year-olds with no financial assets (6.7%) and no insurance (18%) are reported in the Federal Reserve and LIMRA studies cited above. The distributions of these holdings, illustrated in Figures 11 and 12, are estimated from summary statistics on the distributions that appear in the studies.

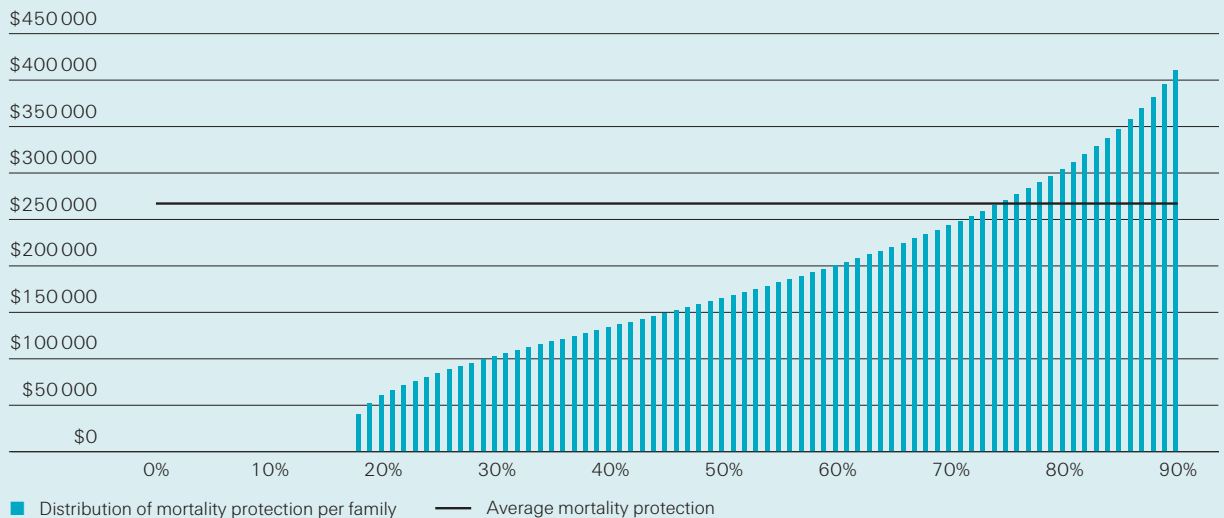
Figure 11
Distribution of financial assets held by
US families whose primary earner is
35-to-44 years old



Notes: To enhance readability, this figure excludes the decile of families with the most financial assets. Though not visible, financial asset holdings are zero for just the lowest 6 percentiles.

Sources: Ana M. Aizcorbe *et al.*, "Recent Changes in US Family Finances: Evidence from the 1998 and 2001 Survey of Consumer Finances", *Federal Reserve Bulletin*, January 2003, Swiss Re Economic Research & Consulting estimates

Figure 12
Distribution of mortality protection held
by US families whose primary earner is
35-to-44 years old



Note: To enhance readability, this figure excludes the decile of families with the most insurance.

Sources: LIMRA International, "Trends in US Household Life Insurance Ownership: The Changing Mix in Coverage", 2000; Ana M. Aizcorbe *et al.*, "Recent Changes in US Family Finances: Evidence from the 1998 and 2001 Survey of Consumer Finances", *Federal Reserve Bulletin*, January 2003, pp 1-32; and Swiss Re Economic Research & Consulting estimates

Age-specific averages, skewed by wealthy households, overstate the level of resources available to fill the protection gap.

Taking the distribution of wealth and insurance holdings into account produces a larger gap estimate, of USD 18.6 trillion.

How can a large majority of families be below average by these measures? The reason is that the distributions of asset and insurance holdings are skewed. A relatively few families have holdings (not depicted in the figures) that are quite high, boosting the averages. Because some of their assets and insurance holdings are not needed to fill a protection gap, treating average holdings as representative of all families overstates the resources available society-wide and understates the actual protection gap.

Measuring the protection gap by taking account of the distribution of asset and insurance holdings within each age group yields higher estimates for each age cohort, especially the age 45–54 population segment (Table 6, bottom line). The total gap estimated in this way is USD 18.6 trillion, as opposed to USD 10.6 trillion for the averages-based approach. The essential message is the same: millions of US families are either uninsured or substantially underinsured.

The protection gaps indicate there is a large potential for increasing term premiums.

Global protection gaps

As a percentage of total protection needed, the protection gaps are relatively uniform across the countries examined, varying from a low of 24% in Taiwan and Italy to a high of 39% in Australia. Germany and Italy, in particular, show a huge potential for an increase in individual term premiums. In Italy, more than six times the existing annual individual term life premium would be needed to fill the gap. In Taiwan, no meaningful figure for a multiple of the individual term life premium can be derived in the absence of a term life market.

Table 7
Absolute life assurance protection gaps 2002, by country and per capita

Protection gap	Australia	Germany	Italy	Taiwan	US*
Aggregate					
Gap USD billion	474	2662	640	234	10 576
Gap in % of the total protection needed	39%	36%	24%	24%	29%
Gap in % of GDP	121%	120%	49%	83%	105%
Gap** expressed in USD billion annual term premium	1.2	6.6	1.6	0.6	23.2
Gap in % of existing annual individual term premium	109%	286%	611%	na	104%
Missing annual premium, % of GDP	0.30%	0.30%	0.12%	0.21%	0.23%
Per capita***					
Gap in sums assured, USD	99 982	143 692	56 409	39 348	202 640
Missing avg annual premium, USD	250	359	141	98	444

Notes:

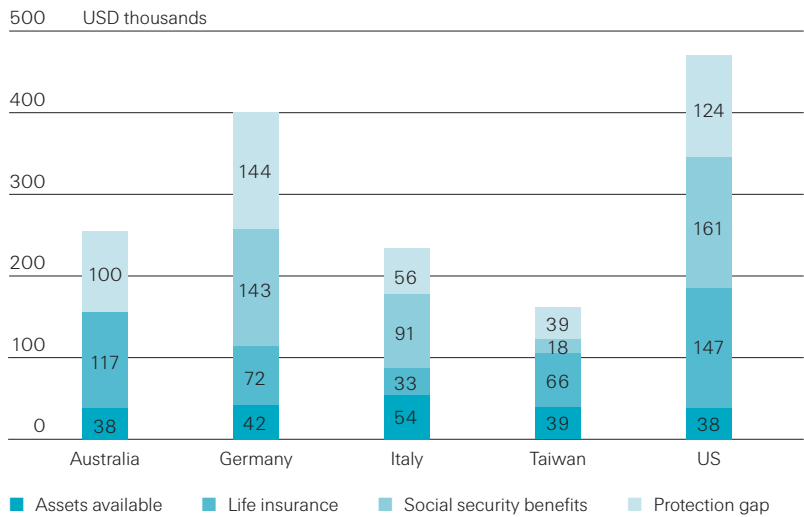
* 2001 figures

** Gap expressed as annual individual term premium based on an average premium rate

*** Working individuals with dependents except for the the US where it is households with dependents
See the appendix for assumptions and data sources.

Source: Swiss Re Economic Research & Consulting

Figure 13
Components of mortality protection for an average worker with dependents



Notes: See the appendix for assumptions and data sources. For the sake of consistency, US data are restated on a per capita basis based on a 2002 estimate that 78% of married wage and salaried employees live in dual-earner couples

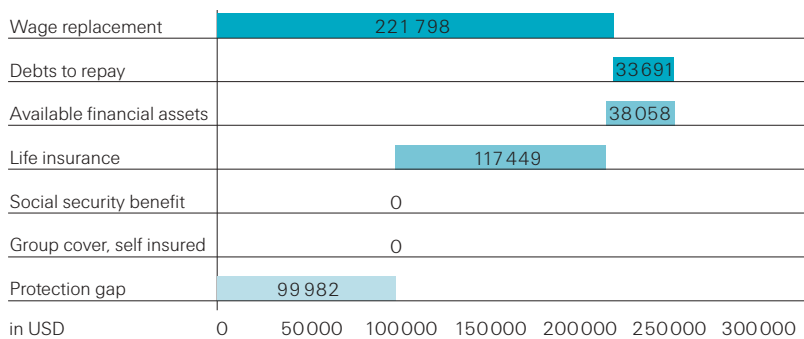
Sources: Swiss Re Economic Research & Consulting estimates; Family and Work Institute, 2002 *National Study of the Changing Workforce*

Australia

Given the resources needed and those available, the Australian gap is USD 99 982 per worker with dependents.

Australia needs to lift annual term premiums 109% to close its protection gap, creating a large growth potential for term life business. The average working Australian with dependents needs to increase his or her annual life insurance premium by USD 250 to meet the additional protection need of an extra USD 99 982.

Figure 14
Components of protection need for an average Australian worker with dependents



Source: Swiss Re Economic Research & Consulting; see the appendix for assumptions and primary data sources

The protection gap is “needs” less resources available.

Only little more than half the Australian protection need is covered.

Germany has strong growth potential for term life.

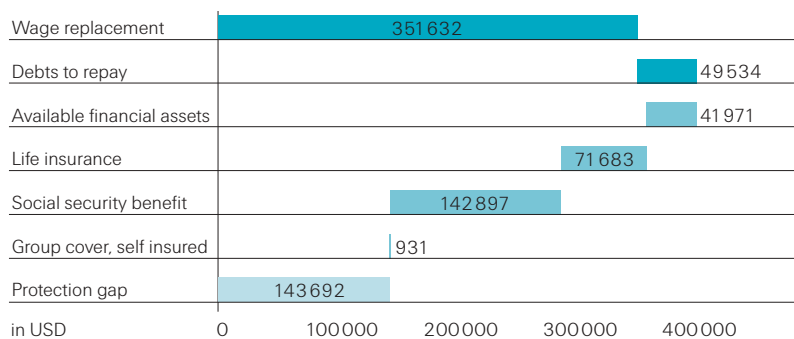
Figure 15
Components of protection need for an average German with dependents

The total protection need of USD 255 490 for an Australian consists of two components: income replacement, USD 221 798 in present value terms, and debt payments, USD 33 691. Offsetting these needs are assets available of USD 38 058 and life insurance coverage of USD 117 449, leaving a gap of USD 99 982.

Compared to other countries, the share of Australian social security benefits in the coverage of the protection need is very low and the share of private life insurance relatively high. Nevertheless, a protection gap of 39% of the total protection need of an average Australian with dependents is the highest value in the five markets under investigation.

Germany

On average, the protection gap per worker with dependents amounts to USD 143 692. This gap could be insured for an annual premium of USD 359. Looking at the 286% of missing individual term life premium, the growth potential for term life business in Germany is only second to Italy.



Source: Swiss Re Economic Research & Consulting; see the appendix for assumptions and primary data sources

Social security benefits are insufficient to meet German protection needs.

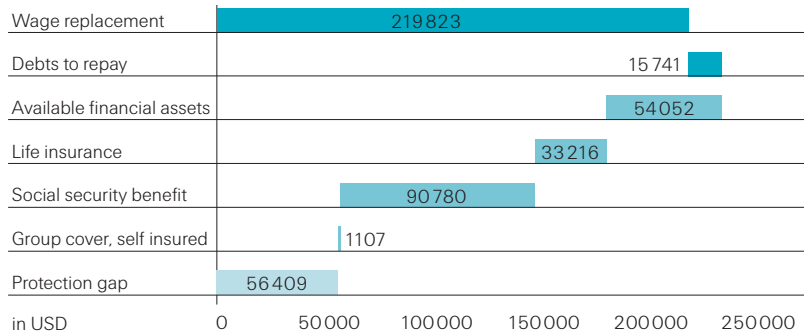
Though, unlike Australians, Germans receive survivors’ benefits from social security, they are still insufficient to meet their protection needs. The protection gap is still high mainly due to the low amount of private life insurance cover.

Italians would need six times more individual term life cover to fill in the mortality protection gap!

Figure 16
Components of protection need for an average Italian with dependents

Italy

An average Italian with dependents would have to spend USD 141 per annum extra on term life insurance to meet his or her family’s protection needs. Though low, compared to Germany (USD 359) and Australia (USD 250), as a percent of existing premium payments it is 611%, reflecting the low amount of mortality protection, particularly term life, in Italy.



Source: Swiss Re Economic Research & Consulting; see the appendix for assumptions and primary data sources

The gap amounts to 24% of the protection need.

The protection gap estimate for Italy is far smaller than that for Germany in part because Italy has a much lower average declared wage (USD 22 450 compared to 34 504 for Germany). While part of the wage differential is genuine, part of it reflects the large size of Italy’s grey or shadow economy.²⁷ Adjusting for the extra income provided by the shadow economy yields an estimate of the Italian protection gap of 32% of protection need, still below the figure for Germany since Italians have higher financial assets. Without adjusting for the grey economy, Italy’s protection gap is 24% of its total protection need.

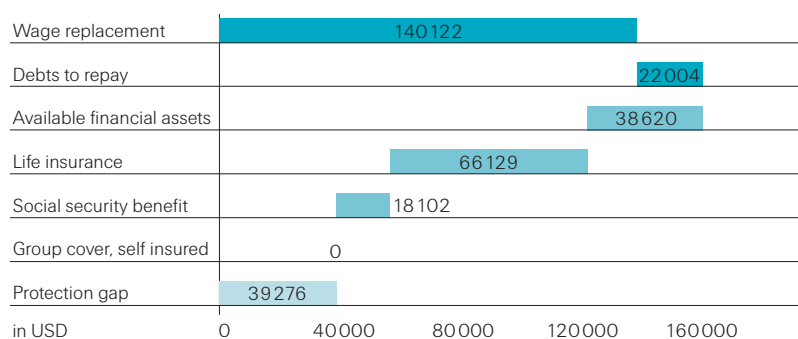
²⁷ Friedrich Schneider, a leading authority on the grey economy, estimates that it represents 16.8% of German GDP and 26.2% of Italian GDP (*The Globalist*, 12 December 2003). Adjusting for this differential, the average Italian wage is estimated to be USD 25 310.

Taiwan

Taiwanese society is family-oriented, with children providing for their aging parents.

Many Taiwanese have to support elderly parents. Therefore, the assumptions for the protection gap do not adequately capture the real-life situation of the typical Taiwanese household. Retired people receive only small pensions, often living with their children and taking care of the grandchildren. This allows many families to have two incomes with both parents working, thereby increasing the percentage of working people with dependents.

Figure 17
Components of protection need for an average Taiwanese with dependents



Source: Swiss Re Economic Research & Consulting; see the appendix for assumptions and primary data sources

A large share of the Taiwanese protection need is covered by life insurance taken out mainly as savings products.

Taiwanese purchases of life insurance are strongly influenced by a taxation system that favors savings products with life insurance. The life assurance protection needs are usually covered by buying whole life insurance including a considerable savings component. There is not yet a real term life insurance market in Taiwan.

Shrinking the protection gap

What are some of the ways the protection gap can be reduced?

The previous analysis examined the protection gap and estimated its magnitude for five countries. This section discusses how and why industry and government officials should shrink the protection gap.

Shrinking the protection gap is sound public policy...

The need for action

Inadequate mortality protection causes genuine, widespread hardship. The problem is twofold: many families have no mortality protection at all, while many others have inadequate mortality protection. According to one estimate, the poverty rate of women in the US who were widowed rose from 9% to 42% over the two years after their husbands died.²⁸ Adequate insurance could have prevented much of this poverty. Shrinking the protection gap is sound public policy that will improve the quality of life for many individuals.

...that is needed because of the negative externalities that underinsurance causes...

Aside from the question of compassion, there are two economic arguments for why policy intervention is warranted. First, when individuals are underinsured, it creates a *negative externality* – an uncompensated cost borne by others.²⁹ The deaths of underinsured wage earners cause their dependents to require public assistance, a cost borne by taxpayers. Reducing the protection gap therefore benefits society at large.

...and the fact that many families are uninsured or inadequately insured.

Second, as previously noted, many families with extensive insurance needs hold little or no mortality protection. This irrational behavior – likely due to inertia, procrastination and a lack of advice – means that consumer education and policy intervention can lead to better, more informed choices.

Boosting social security benefits would help, but is not feasible in most countries.

One possible solution – expanding social security benefits – is not viable for most countries. As the populations of developed countries age, the number of beneficiaries supported by each member of the workforce continues to rise rapidly, stretching public pension systems to their limits.³⁰ Industry officials and government policymakers must therefore look elsewhere for solutions. Here are some ideas.

A lack of professional guidance causes many to be underinsured or uninsured. Workplace education can help rectify the problem.

Suggested initiatives

Workplace education

A lack of professional advice causes many families to neglect their mortality protection needs. Workplace education is one solution. Independent consultants can teach classes to groups of employees on the importance of mortality protection, the implications of being underinsured at death, how to measure one's needs, and how mortality protection fits into the larger framework of financial planning. These classes would enable employers to provide workers

²⁸ Michael D. Hurd and David A. Wise, "The Wealth and Poverty of Widows: Assets Before and After the Husband's Death", in David Wise (ed.), *The Economics of Aging*. Chicago: University of Chicago Press, 1989, pp 177–199.

²⁹ An example of a negative externality is when a manufacturer pollutes, creating an external cost – the harm caused by the pollution – borne by the people living nearby.

³⁰ For a complete discussion, see *sigma* No. 8/1998, "Financial difficulties of public pension schemes: market potential for life insurers".

with a valuable benefit at modest cost. Insurance industry associations can support these educational initiatives by developing training materials for use at the sessions.³¹

Many are underinsured because they don't know how much protection they need.

Standardized, transparent reporting

Many are underinsured because they overestimate the benefits their survivors would receive should they die. In some countries, people share a mistaken notion that social security survivor benefits completely eliminate the need for mortality protection. A way to overcome this confusion is through clearer, more coordinated communication.

Standardized annual reporting can help people make better decisions about their coverage.

By working together through their industry associations, insurers in each country can devise a standardized form, which they all send to clients once a year on their birthdays, stating how much mortality protection the client has, as in Denmark. The industry association should lobby the government to provide a comparable report on social security survivor benefits, as in the US. Armed with these reports, consumers will be better able to assess their total level of mortality coverage and to identify any unmet life insurance needs they may have. Many would still need an adviser's help to understand their needs and how to meet them. Nonetheless, the reports would assist client and adviser alike.

Tax incentives would encourage employers and individuals to purchase mortality protection.

Tax and regulatory incentives

Another approach is to implement tax and regulatory policies designed to combat the protection gap. These policies might encourage employers to provide uniform mortality coverage to all workers, equal to some multiple of their salaries. Tax policy can help by making the provision of this benefit tax free and providing tax credits to employers that offer the coverage to the entire workforce. Moreover, just as there are tax incentives now in place to encourage people to save enough for retirement, tax incentives can be used to encourage people to purchase adequate mortality protection.

The provision of life insurance might also be linked to other benefits programs.

Another possibility is to link mortality protection to existing benefit programs, such as pension plans. In the US, for example, many employers offer 401(k) plans in which workers save for retirement in a tax-deferred account using pre-tax dollars. These plans, which often include matching contributions from employers up to a limit, are very popular. One way to build on this success would be to require employers, as a precondition for offering a 401(k) plan, to first provide a minimum level of basic mortality protection to their workforces, as well as optional additional protection to which some minimum proportion of the workforce must subscribe. This will create strong incentives for employers to establish a viable mortality protection program as part of their employee benefits package.

³¹ In some countries industry associations may also need to lobby for regulations that would hold employers harmless for providing this workplace advice should an employee (or a surviving dependent) sue the employer for offering what, after the fact, seems like bad advice. As Robert Shiller notes in *Irrational Exuberance* (p 219), until a Labor Department ruling in 1996, it was legally difficult for US employers to offer workers advice on their 401(k) plans due to potential liability concerns.

Summary and conclusions

Mortality protection is the core risk product of life insurers.

Mortality covers are written throughout the world and dominate the traditional risk market, accounting for close to 80% of global risk premiums in 2003. In recent years, many markets have witnessed a shift in consumer tastes away from products that combine savings with mortality protection. Savings have moved away from bundled products (eg endowments in Germany, the UK and Japan, variable life in the US) into pure savings products (eg single premium bonds in the UK, annuities in the US and Germany) and term insurance has become the preferred type of mortality coverage.

Numerous factors drive demand for protection, but coverage is often insufficient.

Household demand for mortality protection is driven by a range of factors including age, income and affordability. Despite observed patterns with respect to demographic and economic factors, research shows that life insurance coverage is poorly correlated with underlying financial vulnerabilities. The basic financial needs of many families remain unaddressed, with the young and the less affluent particularly vulnerable to a drastic decline in living standards in the event of the primary wage earner's death. Large segments of the population show little awareness of their insufficient mortality coverage, often due to the misperception that social security provides sufficient protection.

Term premiums have grown rapidly worldwide, but remain very small in some markets.

Term markets are very competitive and have grown rapidly in recent years. In many developed markets such as the US and the UK, term prices have fallen substantially due to mortality improvements and competitive market forces, making coverage more affordable. Term markets vary widely across countries with respect to size and degree of product development. This variation reflects differences in social security provisions, group insurance coverage, cultural norms and consumer preferences. In some countries such as Taiwan and Italy, term insurance accounts for just a small share of total mortality protection.

The industry and government need to design solutions to address the substantial protection gaps that exist.

This *sigma* identifies substantial mortality protection gaps, ranging from 24% of total protection needed in Taiwan and Italy to 39% in Australia. All countries show potential for a substantial increase in individual term premiums, especially Germany and Italy. Improving awareness of mortality protection needs and designing industry and government solutions to close the gap are important steps in addressing the problem. Some suggested initiatives include workplace education about the importance and need for mortality protection, standardized transparent reporting of existing coverage, and tax and regulatory incentives for employers to provide coverage and for workers to purchase coverage.

Key country-specific parameters and assumptions used in the analysis

Parameter	Australia	Germany	Italy	Taiwan	US (1)
Per capita (2)					
Average gross wage, 2002, USD (3)	26 146	34 504	22 450	14 468	71 592
Income replacement multiplier (4)	8.5	10.2	9.8	9.7	9.8
Wage replacement (5)	221 798	351 632	219 823	140 122	704 669
Debt (6)	33 691	49 543	15 741	22 004	66 056
Available financial assets (7)	38 058	41 971	54 052	38 620	62 510
Life insurance cover (8)	117 449	71 683	33 216	66 129	241 359
Social security benefits, present value (9)	None	142 897	90 780	18 102	264 217
Group insurance, self insured (10)	None	931	1 107	None	Included with life insurance cover
Aggregate country data					
Exchange rate, US dollars per local currency (11)	0.54	1.05	1.05	0.03	
Nominal pre-tax investment return (12)	6.2%	4.0%	4.3%	4.1%	5.0%
Projected inflation rate (13)	2.6%	2.0%	2.0%	1.6%	2.5%
Number of workers with dependents, 1000s (14)	4 741	18 522	11 355	5 966	52 190
% of workers with dependents (15)	50%	49%	48%	63%	57%
Term life premium rate (16)	2.5 per 1 000	2.5 per 1 000	2.5 per 1 000	2.5 per 1 000	2.2 per 1 000
Debt, USD bn (6)	160	918	179	131	3 447
Available financial assets, USD bn (6), (7)	180	777	614	230	3 262
Life insurance cover, USD bn (8)	557	1 328	377	395	12 597
Social security benefits, present value, USD bn (9)	None	2 647	1 031	108	13 789
Group insurance, self insured, USD bn (10)	None	17	13	None	Included with life insurance cover
Term life premiums, USD bn (17)	1.09	2.33	0.57	na	27.59

Notes:

na = not available

- (1) US data are by household, not individual. The population examined is families with at least one dependent whose primary earner is 55 or younger.
- (2) The population examined is working people with at least one dependent.
- (3) Sources: Taiwan – Directorate-General of Budget, Accounting & Statistics, Executive Yuan, Taiwan, R.O.C.; all other – OECD Economic Outlook, June 2003. For the US, total household income.
- (4) For all except US: calculated using weighted average over age groups 16–65 assuming: a) proportion of gross wage to be replaced is 66.6% until age 36, declining linearly to 50% at age 64; b) children will be supported until age 20; c) spouse to be supported until age 65.
- (5) Income replacement multiplier times average gross wage.
- (6) Sources: US – Federal Reserve “Survey of Consumer Finances”, 2001 and Census Bureau; all other – Swiss Re Economic Research & Consulting estimates based on national flow of funds data.
- (7) 50% of household assets. Where necessary, insurance reserves are deducted in order to avoid double counting.
- (8) Sources: Australia – based on individual term life sums assured by DEXX&R; group cover estimated based on AUD 1128m group premium assuming that 66% is mortality at an average premium rate of 1.3 per 1000. Germany – based on GDV 2002 figures on sums assured excluding individual and group pension and long-term care and disability covers; Italy – based on total figure for sums assured 1997 from ANIA, assumptions on lapses by Swiss Re ER&C and ISVAP new business figures 1999 onwards; Taiwan – based on in-force sum insured 2002 group and individual figures from the life insurance association of the R.O.C. deducting sums assured of pensioners. Allocation of 69% of “insurance against death” (including mainly whole life) to working individuals with dependents. Remaining sum insured split equally over working population; US – based on LIMRA International 1998 data, average per household adjusted to 2001 levels, and Census Bureau data.
- (9) Present value calculated on the basis of the same assumptions as the calculation of the present value of wage replacement. Germany – 1st pillar: assuming that a working individual with dependents has a cover of 25% of average wage; 2nd pillar: 50% of claims from company pension schemes 2002 assuming that the remaining 50% are pensions. Italy – 1st pillar: present value of an average cover per working individual with dependents of EUR 5888 which was the average benefit in 2002; source: le prestazioni pensionistiche al 31 December 2002, INPS, November 2003, on page 7; Taiwan – labor insurance scheme for working individuals with dependents assuming a cover of 30 average monthly benefits of TWD 25 227; source: Department of Statistics, Council of Labor. US – Social Security Administration 2003 data on survivor benefits; ER&C estimates to reflect demographics and to adjust to 2001 levels and Census Bureau data.
- (10) Germany: assumes that 100 000 employees are covered by not-insured group schemes with an average of four times 125% of average wage. Italy: assumes that 100 000 employees are covered by not-insured group schemes with an average of four times 140% of average wage.
- (11) Currencies are translated into US dollars using year-end 2002 exchange rates, as reported in *International Financial Statistics*.
- (12) Estimated as a weighted average of expected returns to stocks, bonds and bills in each country. Used as discount rate to calculate present discounted value of social security benefits and income stream to be replaced.
- (13) Long-term projection; source Swiss Re Economic Research & Consulting.
- (14) Sources: Italian labor force data; US Census Bureau; Swiss Re Economic Research & Consulting estimates.
- (15) Workers with dependents divided by working population. Sources for working population: Australia: RBA, employed persons; Germany: Statistisches Bundesamt; Italy: ISTAT, Rapporto Annuale 2002; Taiwan: Directorate-General of Budget, Accounting & Statistics, Executive Yuan, Taiwan, R.O.C., employed persons; US: Census Bureau.
- (16) US: average rate of 2.2 per 1000 assumed; All other: average rate of 2.5 per 1000 assumed.
- (17) Australia: term life premium 2002 according to DEXX & R; Germany: individual regular and single term life premium 2002; Italy: individual term life premium 2002. Taiwan: no individual term life data are available.

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