



sigma

No 1/2007

Insurance in emerging markets:
sound development; greenfield for
agricultural insurance

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Summary

Insurance premium growth in emerging markets remains strong.

Part I: Insurance in emerging markets

Emerging market economies continued to deliver strong growth in 2005 despite generally rising global interest rates and commodity prices. Both life and non-life insurance premiums registered further gains, of 7.5% and 6%, respectively, in the year after adjusting for inflation. While uncertainties stemming from the global interest rate cycle and geopolitical tensions look set to persist in the near term, the insurance growth outlook for 2006 and 2007 remains sound.

Life business growth heavily impacted by regulatory developments

Life insurance business continued to expand robustly in emerging markets, supported by improving economic fundamentals and rising household incomes. Changes in the regulatory environment, however, have impacted negatively on some markets. Premiums dropped in Russia due to the withdrawal of favourable tax benefits, whilst life business in Chile, Colombia and Mexico was adversely affected by changes in either pension fund or accounting regulations.

More innovation and further liberalisation of non-life markets

In non-life business, all emerging regions registered further growth, albeit at a slower rate than in the preceding year. Significantly, Mexico was hit by losses of USD 1.8 billion from Hurricane Wilma. This further highlighted the importance of adequate protection against natural calamities, for which the Mexican government sought coverage in the first parametric solution purchased by a sovereign state. Meanwhile, further market liberalisation was observed in emerging markets, as illustrated by India's plan to remove mandatory tariffs with effect from January 2007.

Outlook remains favourable.

The outlook for emerging insurance markets remains favourable, although some countries will have to grapple with shrinking global liquidity and intensifying geopolitical risks. At the same time, further alignment in regulatory standards and the drive to market liberalisation will challenge the ability of emerging market insurers to adapt to a fast-changing business environment.

Agricultural insurance is at a nascent stage in emerging markets.

Part II: Agricultural insurance in emerging markets

Few emerging markets currently offer sufficient insurance coverage against the broad range of production risks inherent in agriculture activities. Total agricultural insurance premiums in emerging markets were estimated at around USD 1.1 billion in 2005, less than 20% of the global total, although emerging markets account for nearly 70% of food production worldwide. A properly-designed risk management system is thus essential for protecting farm operators and reinforcing rural development.

Commercial agricultural insurance is generally under-utilised – significant niche market potential.

A review of existing agricultural insurance regimes in emerging economies shows a mixed record. Some schemes suffer from low penetration and consistent underwriting losses due to factors ranging from high administration costs to adverse selection. Commercial insurance in general still has a low take-up but could gain in importance. Economic fundamentals, including trade liberalisation and the shift from subsistence farming to commercial farming, point to growing sophistication in farm production and intensifying competitive pressure. This will further enhance the importance of commercial agricultural insurance, which could be introduced via a broad spectrum of hybrid systems combining actuarial disciplines as practised in commercial underwriting with the affordability stressed in public insurance schemes.

Government and private insurers can promote a more conducive market.

Practitioners in agricultural insurance are keenly aware that this line of business tends to attract political scrutiny, due to its implications for the livelihood of a large segment of an emerging market's population. Many of today's agricultural insurance schemes involve government participation in distribution, administration and risk-sharing and financing. The politically sensitive nature of this line of business suggests that, properly engaged, private/public participation can create an environment more conducive to agricultural insurance growth by designing risk management strategies that articulate the distinctive but complementary roles between public disaster relief and private insurance support. Government efforts in improving rural financial infrastructures and weather data collection, for example, can also ease insurers' access to potential clients and support their underwriting activities.

Market potential of USD 10 billion

As an illustration, assuming more proactive measures by governments and insurers result in emerging market agricultural insurance penetration rising to levels commensurate with more developed markets, the annual volume of premiums could approach USD 10 billion.

Introduction

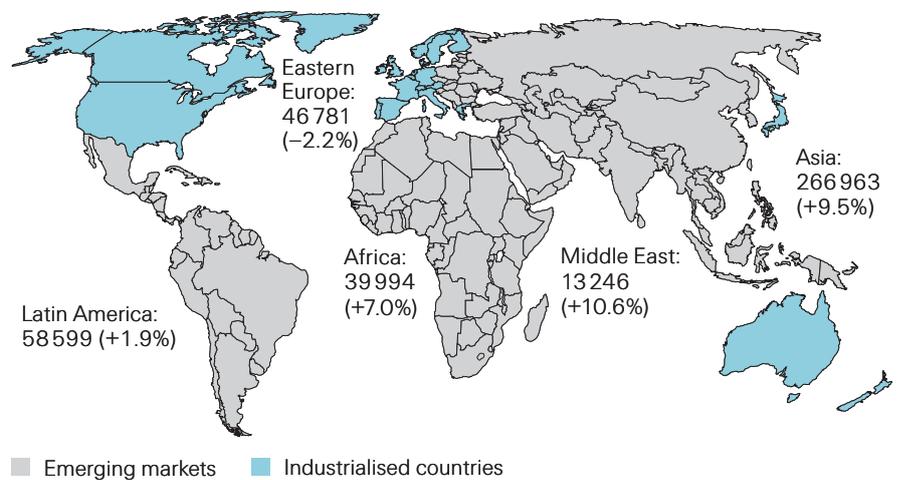
Overview of recent economic and insurance trends in emerging markets

This *sigma* is the latest instalment in an annual series that focuses on economic and insurance trends in emerging markets. The first part of this report will cover recent developments in emerging markets, whilst agricultural insurance, which is deemed to be of growing importance to emerging markets, will be highlighted for more in-depth analysis in the second part.

Five emerging regions covered

This study covers emerging markets in five regions: Asia, Latin America and the Caribbean (referred to as Latin America), Central and Eastern Europe (referred to as Eastern Europe), the Middle East¹ and Turkey (referred to as the Middle East) and Africa.²

Figure 1
Regional insurance premiums 2005,
in USD million, with real growth rates
over the year in brackets



Source: Swiss Re Economic Research & Consulting

¹ Israel is not included within this region

² The regional definition and the classification of emerging markets in this report differ slightly from Swiss Re, *sigma* No 5/2006 "World insurance in 2005". Given the early editorial deadline for this study, some premium figures in this study may differ from those published in the electronic update for Swiss Re *sigma* No 5/2006, "World insurance in 2005". This December 2006 update can be downloaded from www.swissre.com/sigma.

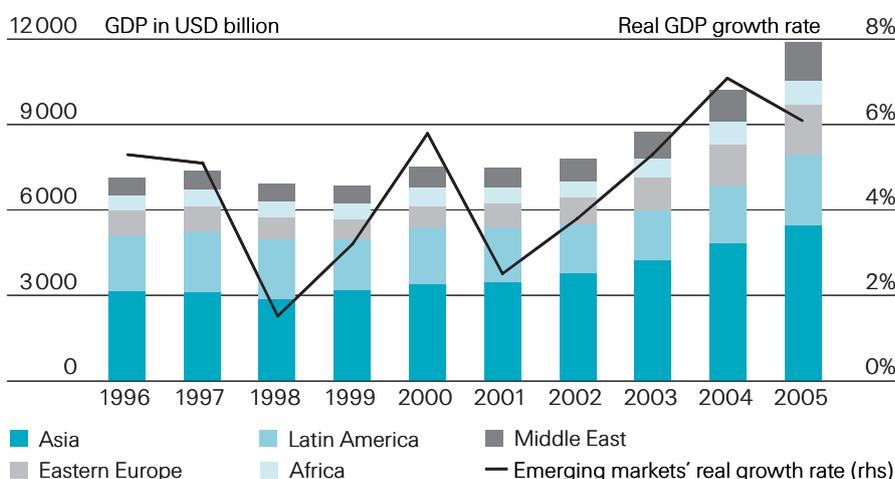
Part I: Insurance in emerging markets

Macroeconomic environment and insurance trends

Strong economic growth persisted in 2005.

Emerging market economies continued to benefit from an extended growth cycle in the industrialised world in 2005. Inflation-adjusted gross domestic products (GDP) in emerging markets grew robustly by 6.1%, against a peak of 7.1% in 2004. While the strongest growth was again observed in Asia (+7.4%), the other regions also delivered impressive performance: the Middle East (+5.7%), Eastern Europe (+5.3%), Africa (+5.2%) and Latin America (+4%). Emerging markets accounted for 26.8% of world GDP in 2005 or USD 11.9 trillion, compared to 22.1% (or USD 6.5 trillion) ten years ago. Some emerging markets are already major economic powers in their own right. For example, China surpassed the UK in 2005 to become the world's fourth largest economy.

Figure 2
Emerging-market GDP and real growth rate, 1996–2005



Sources: Oxford Economic Forecasting, WIIW, Swiss Re Economic Research & Consulting

Driven by favorable global economic environment ...

Many of the drivers that had underpinned the emerging markets' strong economic performance in 2004 persisted into 2005 and early 2006. Further growth of industrialised economies and moderated but still ample liquidity in global financial markets favoured the expansion of the emerging markets. The bullish trend in commodity markets also continued to play out and in some cases (eg copper and oil prices) even reached historic peaks. Furthermore, the acceleration of domestic demand in the emerging markets is gaining importance as a key growth driver.

... although monetary policies have become less accommodative.

Despite higher energy prices, most countries have largely managed to contain price increases. Nevertheless, some markets like Argentina and South Africa are facing higher inflation, which has even reached double-digit levels in Indonesia, Venezuela and Russia. As a result, global liquidity conditions have become less accommodative as some central banks are slowly tightening their monetary policies.

Overall credit rating of emerging markets has improved.

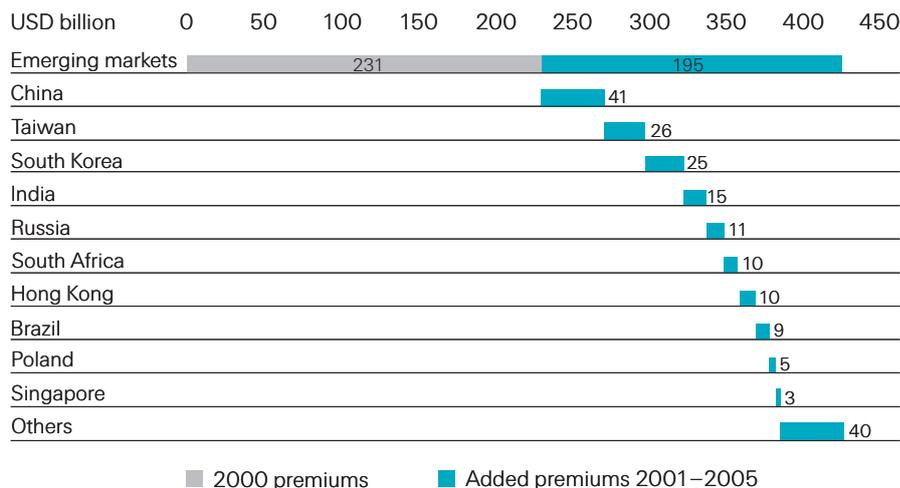
Meanwhile, the performance of the regional asset markets continued to derive support from sound economic fundamentals, greater political stability and investors' seemingly insatiable appetite for higher-yielding emerging-market assets. On the back of this positive environment, 2005 and the first nine months of 2006 witnessed a series of rating upgrades in a large number of emerging countries, most recently China, Russia, the Czech Republic and Indonesia. In the same period, downgrades in the Philippines and Hungary, triggered by concerns as to the sustainability of the fiscal position, proved to be the exception.

Sustained premium growth at a slower pace

Premium growth slowed modestly in 2005.

In 2005, insurance premiums in emerging markets amounted to USD 427 billion, or 12.5% of the world total. In real terms, emerging market premiums grew by a strong 6.9% in 2005 (2004: +7.9%), outpacing the 1.9% growth rate of industrialised countries.

**Figure 3
Contribution to emerging-market insurance premiums, 2001–2005**



Annual average exchange rates are used for currency conversions.

Source: Swiss Re Economic Research & Consulting

Despite the slowdown, emerging-market insurance premiums have nearly doubled over the past five years in nominal USD terms. Nearly USD 200 billion was added to premiums between 2001 and 2005. The top ten contributors accounted for almost 80% of the increase, six of them from Asia.

Life business continued to grow in Asia, but development was mixed in other regions.

Life business maintained its momentum

Emerging-market life insurance premiums totalled USD 256 billion in 2005, which represented a real rate of increase of 7.5% over the previous year and bettered a comparable 7% in 2004. While Asia continued to account for the bulk of headline growth (+10.5%), Africa also made a positive contribution (+5.8%) for the first time in three years. On the other hand, Eastern Europe suffered a second year of falling real growth (-14.9%), whereas the Middle East (-2.8%) and Latin America (-2.1%) also saw a reversal of their stronger momentum in 2004.

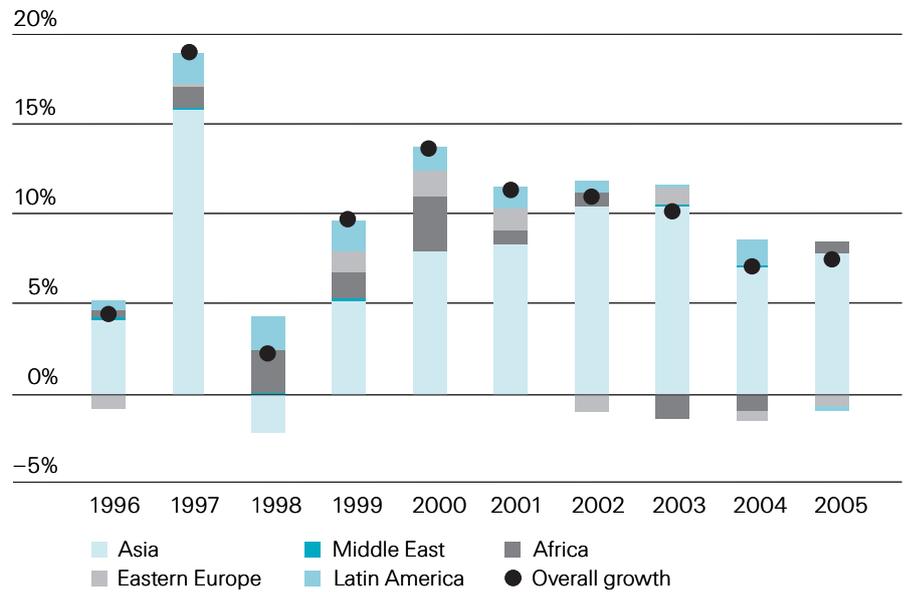
Life-insurance growth in the emerging markets was mainly driven by the fast-growing income of a relatively young population which is keen on saving and eager to partake in the region's booming stock markets. Against this backdrop, growth in Asia was driven by an upsurge in sales of participating and investment-linked life products, as well as annuities. Likewise, remarkably strong demand for unit-linked products was noted in Africa (mainly South Africa).

Changes in tax and accounting regulations had a significant impact.

Still, changes in the regulatory environment can have major impacts. The retrenchment in growth in Eastern Europe was primarily a consequence of falling premiums in Russia after the removal of tax benefits for part of its life business back in 2002, the effects of which still impacted on the market in 2005. This more than offset strong premium increases in the other markets of the region: Poland, Hungary and Slovakia all registered double-digit real premium growth in the year, mainly driven by strong growth in unit-linked and ordinary life business (Poland, Hungary) and by new opportunities in the field of voluntary pension business (Slovakia).

In Latin America, changes in the regulatory and accounting regimes negatively impacted on life premium growth in 2005. The shrinkage in premiums in Chile and Colombia was mainly due to changes in pension fund regulations, while revisions in premium reporting caused individual business in Mexico to collapse. This has more than offset the stronger growth in group life business, which was underpinned by booming loan markets that fuelled demand for credit life insurance.

Figure 4
Contribution to emerging-market life
premium real growth by regions



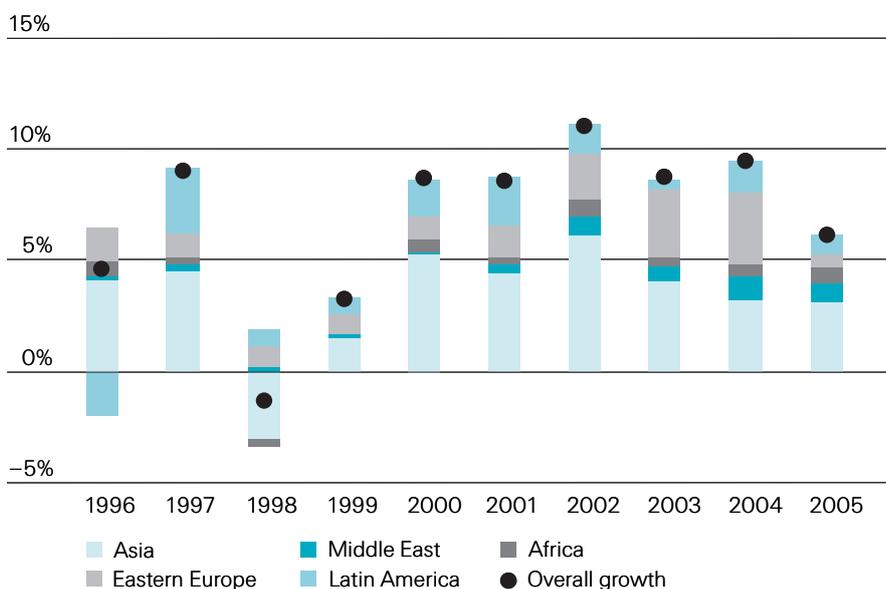
Sources: Oxford Economic Forecasting, WIIW, National insurance authorities

Non-life premium growth slowed.

Non-life premium growth slowed

In 2005, non-life premiums in emerging markets increased by 6.0% in real terms, to USD 169 billion, against 9.5% in the preceding year. This slowdown in part reflects a levelling off in some commercial-line rates. All regions experienced positive real growth ranging from 2.4% in Eastern Europe to 13.7% in the Middle East. In Asia (+7%), intense competition led to a decline in premiums in Hong Kong while growth slowed in China and Taiwan and remained negative in Singapore, yet overall growth was sustained by continued strong performance in South Korea and India. In Latin America (+4.6%), a favourable economic environment led to increases in motor, accident and credit insurance in most markets. In Eastern Europe, growth was driven mainly by premium increases in Russia, which reflected a recovery in liability business. However, below-average non-life insurance growth in Central Europe together with a strong decline in premiums in the Ukraine – due to the reduction of tax optimisation schemes – dragged down overall growth. In particular, property insurance performed poorly on the back of strong competition for large risks – driven by their favourable claims history and the propagation of cross-border contracts.

Figure 5
Contribution to emerging-market non-life premium real growth by regions



Sources: Oxford Economic Forecasting, WIIW, National insurance authorities

In 2005 natural catastrophes mainly affected industrialised countries, in particular the US. In emerging markets, Mexico was severely affected by the hurricane season. Damage caused by Hurricane Wilma is estimated to have cost the insurance industry USD 1.8 billion, the most expensive insured loss in the history not only of the country but also of Latin America as a whole.

Insurance penetration varies among emerging-market regions.

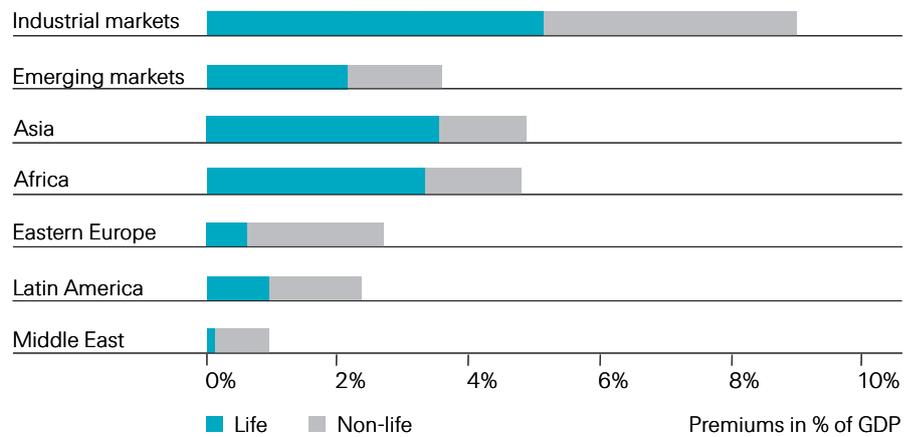
Insurance penetration and spending

Insurance penetration (direct premiums as a percentage of GDP) among emerging markets remained unchanged in 2005 at 2.2% for life and 1.4% for non-life business. Drops in Eastern Europe were offset by gains in Asia and Africa. Nevertheless, significant discrepancies continue to exist at a regional level, which could in part be explained by different levels of economic development (measured as per capita income) and uneven wealth distribution. Also important are specific regional characteristics including education, religion, tax schemes, health and pension structures.

Premium per capita in USD terms bolstered by local currency appreciation

On a per capita basis, emerging-market spending on life insurance increased from USD 40.5 in 2004 to USD 46.1 in 2005, whereas the figure for non-life insurance rose from USD 26.6 to USD 30.4. The strong gains in the year reflected not only rising premiums in local-currency terms but also the general appreciation of most emerging-market currencies against the US dollar during this period, which accounted for one-third to one-half of the gains. Nonetheless, even among those regions with fast rising per capita premiums, there still remains a huge gap compared to their industrialised counterparts, indicating significant catch-up potential in emerging markets.

Figure 6
Insurance penetration, 2005



Sources: National insurance authorities, Swiss Re Economic Research & Consulting

Table 1
Premium per capita, 2005

| Premium per capita – USD | Life insurance 2005 | Non-life insurance 2005 | Life insurance 2004 | Non-life insurance 2004 |
|--------------------------|---------------------|-------------------------|---------------------|-------------------------|
| Industrial markets | 1 887.0 | 1 399.8 | 1 828.0 | 1 372.9 |
| Emerging markets | 46.1 | 30.4 | 40.5 | 26.6 |
| Asia | 56.6 | 21.4 | 48.7 | 18.9 |
| Latin America | 42.0 | 63.8 | 36.8 | 53.4 |
| Eastern Europe | 31.8 | 109.9 | 33.6 | 94.8 |
| Africa | 30.7 | 13.5 | 28.4 | 12.6 |
| Middle East | 14.8 | 40.2 | 13.8 | 36.0 |

Sources: National insurance authorities, Swiss Re Economic Research & Consulting

South Korea remains the biggest market, while China, India and South Africa lead in growth terms.

Life insurance premiums are more strongly concentrated in a few major emerging markets than non-life premiums. In 2005, the top ten markets accounted for nearly 90% of all emerging-market life-insurance premiums, with a profound dominance by Asia. The share of the top ten markets in non-life insurance was 67%. In both life and non-life business, South Korea remained the largest in terms of premium volume, but its inflation-adjusted growth in both sectors was outpaced by the runner-up China. South Africa and India also enjoyed strong, life and non-life insurance premium growth in 2005.

Table 2
Life and non-life premiums in emerging markets, 2005

| 2005 | | | | 2005 | | | |
|----------------|-------------------------|---------------------------|------------------|--------------------|-------------------------|---------------------------|------------------|
| Life insurance | Premiums in USD million | Share of emerging markets | Real growth rate | Non-life insurance | Premiums in USD million | Share of emerging markets | Real growth rate |
| South Korea | 58 848 | 23.2% | 9.2% | South Korea | 24 085 | 14.0% | 6.7% |
| China | 39 592 | 15.6% | 11.8% | China | 20 539 | 12.0% | 12.7% |
| Taiwan | 38 808 | 15.3% | 9.9% | Russia | 16 618 | 9.7% | 12.0% |
| South Africa | 25 930 | 10.2% | 5.0% | Brazil | 13 399 | 7.8% | 6.0% |
| India | 20 175 | 7.9% | 10.2% | Taiwan | 10 197 | 5.9% | 2.1% |
| Hong Kong | 15 340 | 6.0% | 19.8% | Mexico | 7 524 | 4.4% | -1.1% |
| Brazil | 10 556 | 4.2% | 0.2% | South Africa | 7 256 | 4.2% | 11.2% |
| Singapore | 7 176 | 2.8% | 4.8% | Poland | 5 517 | 3.2% | 4.0% |
| Mexico | 5 257 | 2.1% | -6.3% | India | 4 848 | 2.8% | 12.8% |
| Malaysia | 4 795 | 1.9% | 10.1% | Turkey | 4 787 | 2.8% | 10.7% |
| Top 10 | 226 476 | 89.2% | | Top 10 | 114 770 | 66.9% | |

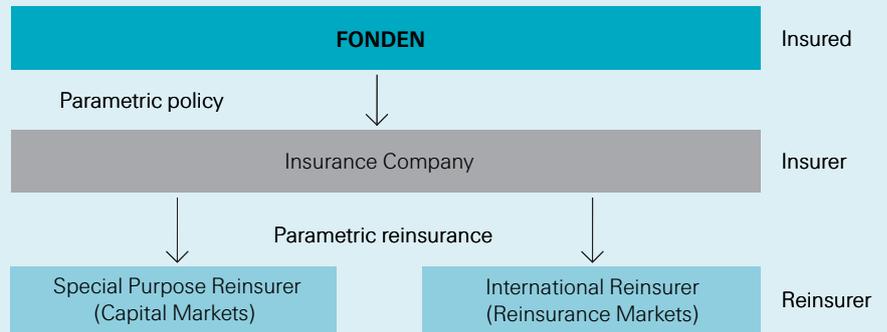
Sources: National insurance authorities, Swiss Re Economic Research & Consulting

The Mexican experience: a parametric solution for coping with natural catastrophes

Mexico, like many other countries, is highly exposed to natural catastrophes. The country's low insurance penetration, relative to global averages, also means that most economic losses are not insured. In 1996, in the aftermath of the earthquake that struck Mexico City, the Mexican government created a natural catastrophes fund called FONDEN with the aim of providing relief from natural disasters. This entity is funded by fiscal resources which are limited and usually insufficient to finance the non-insured losses caused by natural catastrophes. This motivated the Mexican Government to think about alternative ways to ensure prompt recovery of loss payments, to deploy emergency relief efforts and to provide coverage for large geographical areas with the highest potential for physical damage and emergency spending. In this context, the first parametric solution purchased by a government was launched in May 2006. The Mexican government, through FONDEN, is the insured in this structure.

Protection is provided via a parametric triggered coverage. Three events of USD 150 million each (one limit for each of the three most exposed seismic zones in Mexico) are covered within a three-year period. Out of the total amount, USD 160 million is placed in the capital market. If the Trigger Event Conditions (clearly defined in the contract) are met, the total amount placed on the capital market is drawn down. The payment of losses is conditional upon confirmation by an event verification agent (in this case, a leading independent consulting firm which develops catastrophe risk assessment and management methodologies and techniques for the insurance industry).

Figure 7
Parametric solution for the Mexican government



The Mexican Government is aware that this is only the first step on the path towards a more adequate catastrophe risk management regime and it is currently analysing similar solutions for other catastrophic exposures, such as hurricanes, that are proven to have devastating consequences, as Hurricane Wilma (the most costly event in the history not only of the country but also of Latin America) demonstrated in 2005.

This transaction sets an example that is likely to be followed by other countries facing similar exposures. The benefits are manifold: stabilization of government finances, promotion of faster recovery, narrowing the gap between actual economic losses and the financial indemnity available through public and private channels.

Outlook: coping with interest rates and geopolitical risks

Economic outlook still supportive ...

... although risks from a reduction of global liquidity, geopolitical developments are rising.

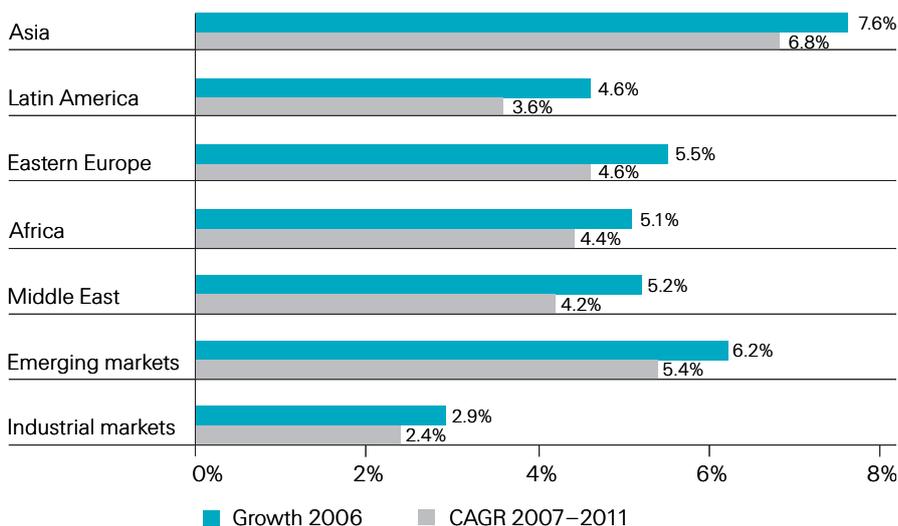
Economic growth

The steady economic growth momentum of 2005 has carried over into 2006. In particular, recoveries in Japan and Europe have gained traction over the past year, while the US economy, though slowing, remains robust. Firm commodity prices, while posing risks to some, are seen as benefiting the external positions of countries from Chile to Russia.

On the other hand, major central banks in the industrialised world have stepped up monetary tightening, and as a result emerging economies are having to grapple with rising, though still low, interest rates. The reduction in global liquidity in particular could have a more pronounced impact on economies that have high leverage positions or balance-of-payments shortfalls, as witnessed by a recent sharp rise in interest rates in Turkey. Geopolitical risks also intensified in several areas, including North Korea and the Middle East.

In this still benign global environment, the near-term prospects for the region are optimistic: output growth is expected to remain strong at 6.2% and 5.7% in 2006 and 2007 respectively. Growth is likely to average 5.4% between 2007 and 2011, double the comparable 2.4% in industrialised economies. In the near term, economic growth in Asia is expected to remain strong, benefiting in particular from robust demand from Japan and China. Eastern Europe will probably continue to grow faster than Western Europe while growth in Latin America is expected to slow, as output gaps begin to close and the stimulus from the recent commodity-price boom ebbs. Meanwhile, the Middle East is benefiting from current high energy prices and booming domestic demand, but the impact of geopolitical developments could still restrain growth.

Figure 8
Real GDP growth forecast, 2006–2011



Sources: Oxford Economic Forecasting, WIIW, Swiss Re Economic Research & Consulting

An increasingly challenging financial and regulatory environment

Insurance business growth

Most emerging-market regions are expected to see sustained insurance demand in 2007 on continuing economic growth and further proliferation of new channels and products. Growth could slow down, however, as interest rates rise and

insurance prices in some markets and business lines remain subject to keen competition pressure. Specifically, in the near term, higher interest rates and a potential acceleration in global inflation will challenge insurers on a wide range of issues in their operating environment, from their investment strategies to claims management. At the same time, more and more regulators are keen to raise competitive standards in their home markets by tightening solvency regimes and pushing forward with market liberalisation. These developments in turn are challenging emerging-market insurers to re-examine their business models and seek out new growth opportunities.

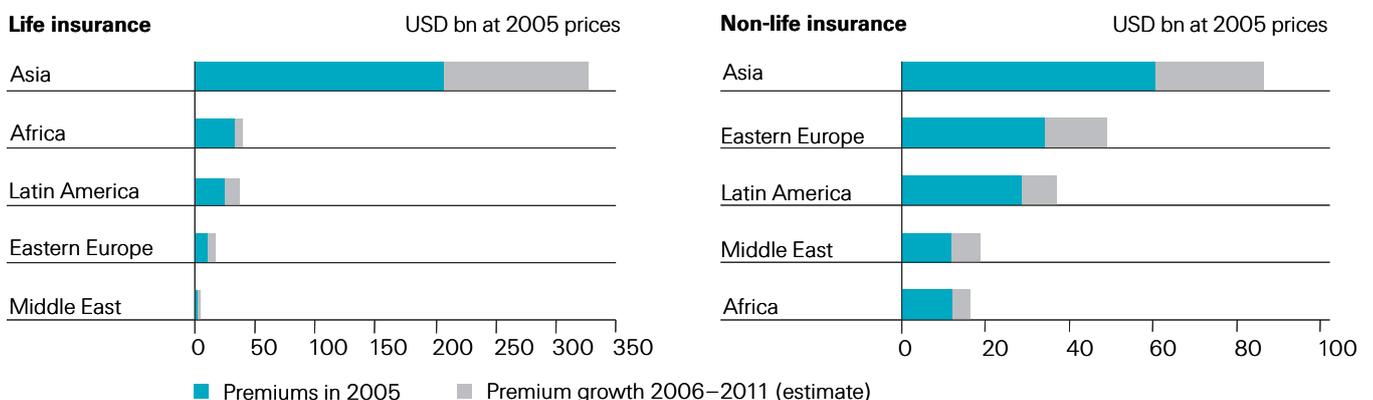
Life insurance will continue to derive support from rising incomes and risk awareness.

Emerging-market life premium growth is expected to slow to around 6–7% in 2006 and 2007, as the general rise in interest rates – albeit from a low level – enhances the lure of other financial savings products. A rebound is likely in Latin America, as the factors that underpinned market weaknesses in 2005 are considered temporary, whereas growth in Eastern Europe could remain volatile, subject to developments in Russia. The medium-term growth outlook nonetheless remains promising, given a healthy economic environment, increasing demand for universal life and unit-linked products and the willingness of some governments to shift from public to private old age provision and to rationalise their social-security systems.

Non-life business growth could slow in 2007.

Non-life premiums are expected to moderate their growth rate further to 6% and 5% in 2006 and 2007. Despite sustained underlying demand, premium growth in most regions is forecast to slow down under the influence of stiffer competition and regulatory changes, one example of the latter being India’s detariffication plan (see Box). However, exceptions to this could be those lines of business affected by hurricanes and other natural catastrophe losses, in which substantial increases are currently to be observed. Under these circumstances, emerging markets are expected to see life and non-life insurance grow, in real terms, by around 7% and 5% respectively between 2006 and 2011.

Figure 9
Real premium growth in emerging markets, 2006–2011



Sources: National insurance authorities, Swiss Re Economic Research & Consulting.

Intensifying competition is driving insurers to seek out new growth areas.

Looking ahead, life insurers have found a growing market in universal life products, as well as promising opportunities in other areas such as unit-linked or pension/annuities business, as governments continue to promote private-sector provision for retirement benefits to supplement state-run schemes. Similarly, non-life insurance in emerging markets is expanding beyond the traditional motor/property business to service a wider spectrum of economic activities and agents. The more advanced economies have already seen strong growth in some of the more sophisticated business lines such as liability insurance. Agricultural insurance, aiming at providing coverage to a populous but underserved sector, particularly in emerging markets, is gaining importance. The next section of this sigma report will focus on this sector.

Managing detariffication – Challenges ahead for India's non-life insurers

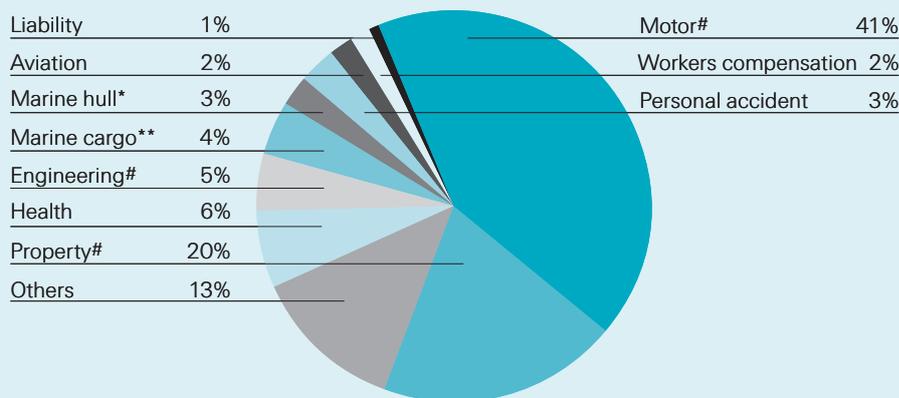
India is in the process of dismantling its tariff regime in the non-life insurance market. Even after an initial effort in 2004 to liberalise major marine line rates, 65% of total non-life industry premiums, including the three main businesses of motor, property and engineering, remain subject to tariff rates set by the Tariff Advisory Committee (TAC). However, the Insurance Regulation and Development Authority (IRDA) released a blueprint in late 2005 that envisions a phased lifting of the tariff regime on these remaining lines, starting with property and engineering. At this writing, the latest proposal would allow insurers full pricing freedom on property and engineering business starting January 2007 but would oblige them to keep the scope of coverage, or terms and conditions of cover, unchanged until 31 March, 2008. Motor lines are also scheduled to be detariffed at the same time but regulatory approvals will likely be required for proposed rate changes, thus giving insurers only partial pricing capability, especially in the controversial third-party liability sector.

While the economic justifications of detariffication are well recognised, industry practitioners nonetheless could face potentially large, disruptive adjustments in the transition to a market-driven environment. These concerns are borne out by a reported 30% drop in marine line rates when they were further liberalised in 2005, which reflected significant overpricing back in the tariff era and the ensuing aggressive price-cutting immediately after detariffication. Considerable gaps are also evident in the remaining tariffed business lines between their current tariff rates and true actuarial rates, eg rates that are priced to actual loss experience. As a result, there are concerns that the coming price shocks from detariffication could be even more pronounced, and that industry-wide premiums could fluctuate wildly once they are fully detariffed.

There is also the question of how a phased implementation of the detariffication plan would impact current regime of cross-subsidization. Specifically, existing tariff rates are seen to be above actuarial rates for property business but vice versa for motor business, implying subsidization from the former to the latter. As a result, current plan of implementing a full liberalization in profitable line rates (property) but a controlled one in loss-making lines (motor) could adversely affect the insurers overall profitability. The concern is compounded by the unwelcome possibility that any proposed rate increase in motor business could be delayed or even curtailed by political resistance, thus subjecting the industry to a prolonged period of deteriorating underwriting results.

As a result, the industry could face rising pressure for rationalization in the near term, as insurers, facing reduced leeway for cross-subsidization and rising pricing uncertainty, take a cautious and selective approach and curtail their exposure in both the detariffed and loss-making tariff lines. While these risks do not give merit to a tariff regime, they do suggest that the authorities need to undertake complementary measures to alleviate potentially destabilizing impacts that could accompany detariffication, which in India's case could be exacerbated by development bottlenecks such as capital shortages and cross-subsidization. Under these circumstances, a relaxation in other regulatory restrictions like the cap on foreign participation would be a timely measure, both to deepen and widen the industry's capital base and to prepare it for a market-driven environment. Last but not least, a clear roadmap, plus a demonstrated resolve, to achieve full detariffication over a reasonable time frame would also help to minimize interim market distortions and ensure that society reaps the full benefit of a competitive insurance market. Meanwhile, insurers have to strengthen their underwriting discipline and rethink their strategies amid the prospect of rising price competition. They will also need to ensure that future losses are adequately reserved if they are to survive as viable entities in the long run.

Figure 10
Non-life insurance by business lines



* detariffed 1 April 2005

** detariffed 1 April 2004

under tariff but to be detariffed 1 January 2007

Source: Interlink, FY04–05 data

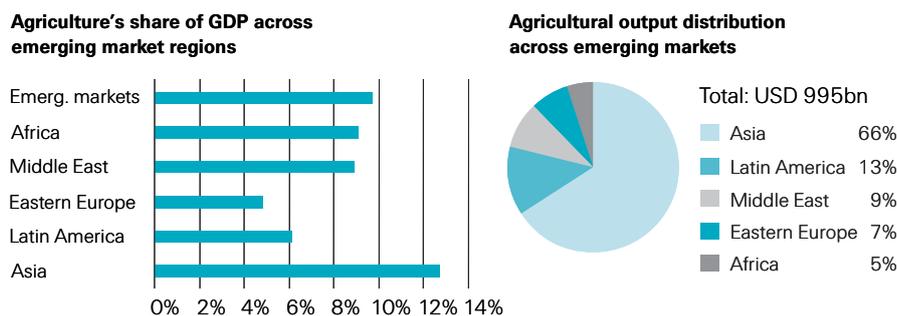
Part II: Agricultural insurance in emerging markets

The importance of agriculture

Agriculture plays an important role in many emerging markets' economies.

Agriculture remains an integral sector of many emerging-market economies.³ Despite its share of total output following a slowly declining trend due to industrialisation, agriculture still accounts for an average 9% of total emerging-market GDP, compared to less than 3% in industrialised countries. Total emerging-market agriculture output in 2005 was estimated at just below USD 1 trillion, or nearly 70% of the world total. Of that, 66% came from Asia, followed by Latin America (13%), the Middle East (9%), Eastern Europe (7%) and Africa (5%).

Figure 11
Emerging-market agricultural GDP, in % of total economy and distribution across emerging regions



Sources: Swiss Re Economic Research & Consulting, estimates based on FAO data

2005 emerging-market agricultural output estimated at USD 1 trillion

Even these statistics do not do justice to the importance of agriculture in emerging markets. The fact that agriculture remains a land- and labour-intensive sector in many of these economies implies that it carries a social, cultural and political importance that exceeds its economic value. In developing countries, it is estimated that farm-related jobs make up 49% of overall employment and that agricultural land accounts for 37% of total land area. In many emerging markets, the agricultural sector is also an important source of fiscal and/or export income for which there is no easy substitute.

Table 3
Relative importance of the agricultural sector in different emerging regions

| | Share of Agriculture in | | |
|----------------|-------------------------|------------|-----------|
| | GDP | Employment | Land area |
| Asia | 12.7% | 58.7% | 53.1% |
| Latin America | 6.1% | 15.1% | 40.0% |
| Eastern Europe | 4.8% | 11.4% | 16.1% |
| Middle East | 8.9% | 31.1% | 59.7% |
| Africa | 9.1% | 24.0% | 35.3% |

Sources: Swiss Re Economic Research & Consulting, FAOStat

Furthermore, whereas many emerging economies have focused on manufacturing-sector growth over the past decades, agricultural development is expected to take on new importance in coming years as the economics behind the agricultural industry improve on several fronts.

³ The following regional markets are covered in this section:

Asia: China, Hong Kong, India, Indonesia, Malaysia, the Philippines, Singapore, South Korea, Taiwan, Thailand, Vietnam

Latin America: Argentina, Brazil, Chile, Colombia, Mexico, Venezuela

Eastern Europe: Czech Republic, Hungary, Poland, Russia, Slovakia, Slovenia, Ukraine

Middle East: Iran, Saudi Arabia, Turkey, United Arab Emirates

Africa: Algeria, Egypt, Morocco, South Africa, Tunisia.

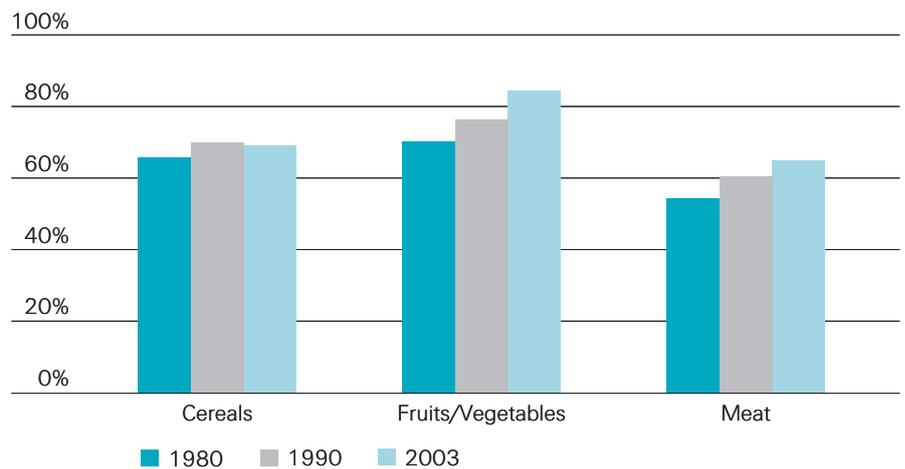
Improving economics of the agricultural industry

Many emerging markets have undertaken structure reform to revamp their agricultural sectors.

Trade liberalisation

Many emerging markets have seen major shifts in their agricultural policies over the last 20 years that eventually contributed to more sustainable growth of the sector. The roaring nineties were characterised by a volatile macroeconomic environment – unsustainable fiscal and current account deficits, hyperinflation, external debt crises – and the failure of government policies aiming at protecting the local agricultural sector by means of “import substitution” and subsidies. This led to calls for policy reforms. Under the auspices of international institutions (eg the World Bank and IMF), many countries worked on domestic structural reforms. At the same time, major efforts were devoted to establishing a framework for progressively reducing trade-distorting protection of the agricultural sector under the terms of reference of the GATT⁴ negotiations (Uruguay Round) in 1995.

Figure 12
Emerging-market shares in world production



Source: FAOStat

More trade liberalisation in the pipeline

The latest round of WTO Ministerial Meetings, held in Hong Kong last year, made some further progress in eliminating the developed markets’ trade barriers to the emerging markets’ agricultural exports. The global backdrop thus underpins the increasing need for emerging markets to strengthen their agricultural sectors in preparation for a more competitive environment going forward.

Economic, social and demographic changes are driving shifts in dietary patterns ...

Socio-demographic factors

New demands are arising from higher per capita food consumption associated with favourable income and trade growth as well as shifts in dietary patterns due to social and demographic changes. Trade liberalisation, together with progress in preservation and transportation technologies, has made the mass, long-distance procurement of most agricultural products feasible both technically and economically. On the other hand, continued income growth, global aging and urbanization have culminated in increasingly sophisticated food demand patterns in both industrialised and developing markets, as consumers

⁴ GATT: General Agreement on Tariffs and Trade, came into force in 1947 with the aim of regulating international trade.

... and opening up opportunities for emerging markets to diversify into cash crops.

expand their dietary requirements beyond daily staples. These developments open up opportunities for emerging markets to capitalise on comparative agricultural advantages and widen their production options beyond the traditional food crops and towards the more high-value sectors.

In particular, thanks to their unique microclimate, several emerging markets are now the dominant producers of certain luxury “cash crops” such as cocoa, coffee and tea that will likely see the greatest growth as rising global incomes drive up demand for non-essential foods.

Table 4
Relative importance of the agricultural sector in different emerging countries

| | Tea | Coffee | Cocoa |
|---|-----------|-----------|---------------|
| 1 | India | Brazil | Cote d'Ivoire |
| 2 | China | Vietnam | Ghana |
| 3 | Sri Lanka | Colombia | Indonesia |
| 4 | Kenya | Indonesia | Nigeria |
| 5 | Indonesia | Mexico | Brazil |

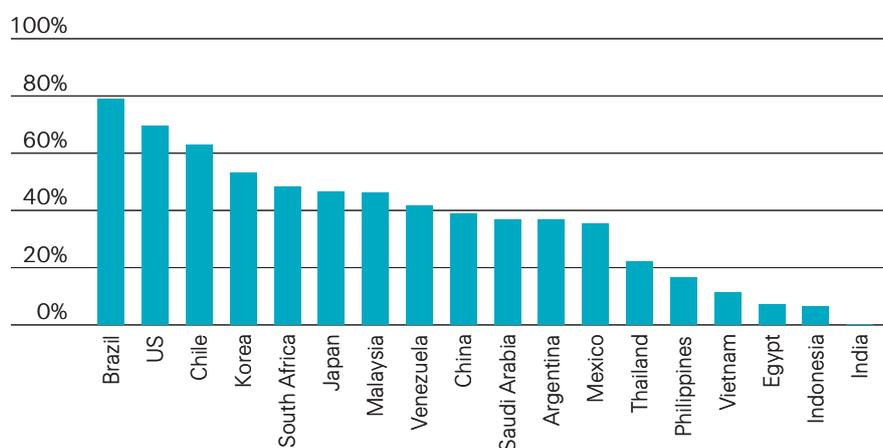
Sources: FAO, The Economist

New buyers of agricultural products

Changing production, distribution and consumption patterns

Along with the shift in food demand patterns, fundamental changes are also taking place at the distribution level. In many countries, thanks to urbanization, foods are being delivered through a wider array of outlets (supermarkets, restaurants) and sold more and more as part of a bundled product (packaged foods, meal services) at prices far higher than their farm-gate cost. This makes intermediaries more important and expands the immediate buyers of agricultural outputs beyond the traditional local wholesalers to multinational food manufacturers, supermarket/restaurant chains and exporters. Also, the food industries are pursuing new arrangements such as vertical integration and contract farming in order to secure supplies, thus changing the definition of traditional farms. One implication of these trends is that commercial farming has made the agricultural industry more viable economically but at the same time more exposed to losses.

Figure 13
Retail market share of super/hypermarkets, 2002



Source: International Marketing Data and Statistics

Risk management in agriculture

Agriculture is a high-risk business.

The perils

Farming and farm-related activities are among the oldest of professions, and the associated risks are well documented. They can be summarised as follows:

- natural risks – including weather risks, eg hail, drought, flood and seismic activity such as earthquake, tsunami, etc; and pests and diseases – outbreak of livestock epidemics, for example foot-and-mouth disease or avian influenza (H5N1);
- social risks – war, terrorism, looting, theft, poisoning, fire and accidents, etc;
- economic risks – price fluctuations, interest rate movements and changes in demand, etc;
- policy risks – trade policies including tariffs/embargoes, changes in agro subsidies and tax policies etc;
- operational risks – including personnel and timely input of material etc.

Various risk management tools available; some involve private/public partnership.

Over time, various tools have been developed to help manage and mitigate some of these risks. For example, the advent of commodity futures has provided farm producers with an effective means of hedging their exposure to price fluctuations of certain products. The use of vaccines and quarantine also reduces the potential loss due to a disease outbreak. Crop diversification, intercropping and flexible input use are employed as risk mitigation tools. Despite these efforts, agricultural activities are still subject to a high level of uncertainty that cannot easily be alleviated by its undertakers on their own, and, among them, weather is probably one of the most menacing and recurring perils.

**Table 5
Risk management regimes for coping
with agricultural risks**

| | Risk absorption | Risk sharing |
|---------------------------------|---|---------------------|
| Self insurance | Individual farming unit | Individual |
| Ad hoc disaster relief | Government budget/intl aid | Public |
| Institutionalised disaster fund | Government budget/intl aid | Public |
| Public insurance | Government budget | Public |
| Micro insurance | Government budget/ private insurers' capital | Public and private |
| Mutual insurance | Local farming cooperatives | Community |
| Commercial insurance | Private insurers capital | Private |

Source: Swiss Re Economic Research & Consulting

Emerging-market governments are less well-prepared to intervene.

Due to their limited fiscal resources and flexibility, emerging-market governments are usually in too weak a position to adequately and promptly compensate weather-related losses suffered by the agriculture sector. Worse still, their farming communities usually comprise a large number of small, family-owned farms that have little access to credit, making the financial shock all the more damaging and lasting. These weaknesses delay recovery and, in the more extreme events, may directly lead to financial ruin.

Emerging markets vary in their level and form of state support for the agricultural sector.

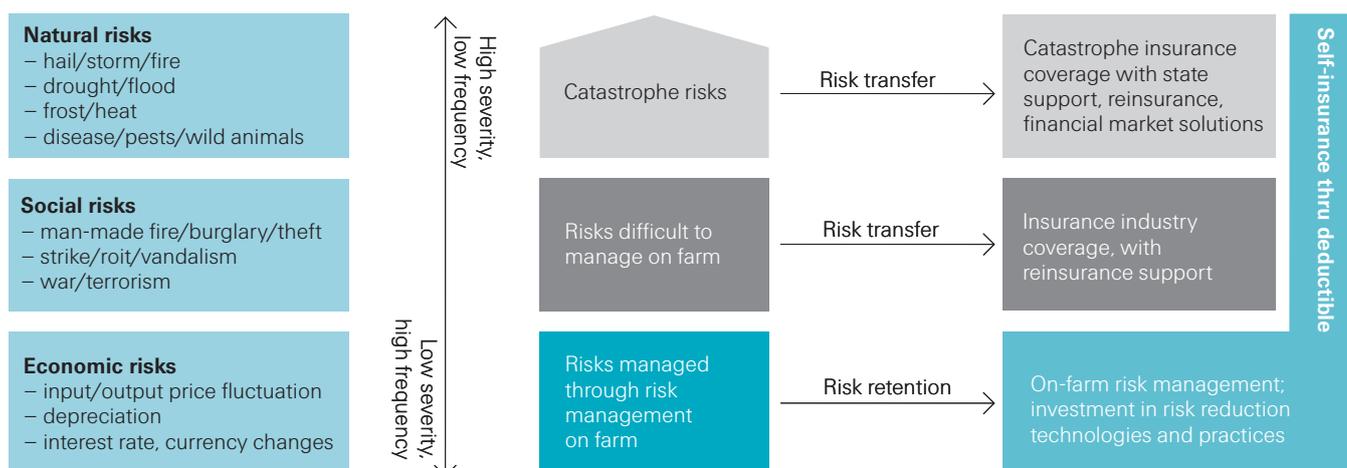
In practice, emerging markets vary greatly in providing their agricultural sectors with protection against production shocks. While the more primitive systems rely heavily on self-insurance by farm owners and on ad hoc disaster aid, some have adopted a more proactive stance and have joined together with specialised units to establish relief funds in preparation for future events. As the risk management regime becomes more sophisticated, insurance can offer important complementary benefits to ad hoc public assistance by:

- reducing reliance on post-disaster financing which can be more costly to government coffers than insurance programmes;
- expediting recovery;
- generating greater risk awareness among farmers and encouraging adoption of risk-mitigation measures;
- encouraging structural reforms to improve the insurability of agricultural risks;
- incorporating incentives for sustainable farming into agricultural policy.

This *sigma* explores how insurance can help the emerging-market agricultural sector.

Of particular relevance to emerging markets are the implications for fiscal stabilisation and economic development. Agricultural insurance provides a channel for ex ante risk sharing and transfer that both alleviates and augments governments' ex post public-disaster assistance. Also, while its primary purpose is to provide security against production risks, an efficient agricultural insurance market can also act as a long-term catalyst for beneficial change in industry and society. Primarily, insurance captures the inherent risk of farming activities as a regular business expense, while actuarial prices that take objective risk assessments into account are a strong incentive for adopting industry best-practice standards for mitigating and avoiding risk.

Figure 14
Risks in agriculture and insurance



Source: Swiss Re Economic Research & Consulting

Overview

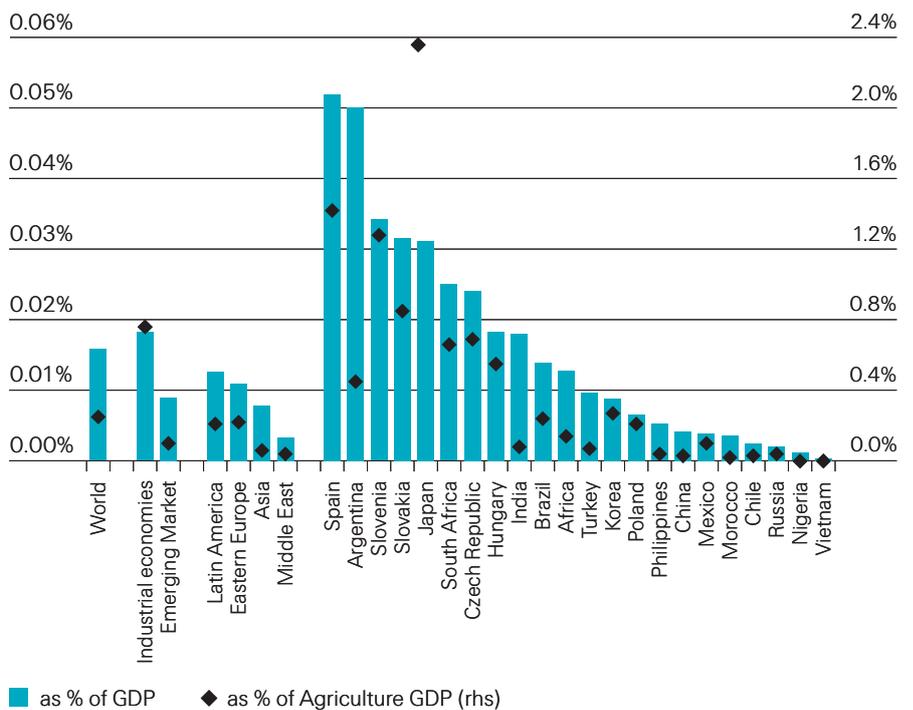
The scope and coverage of agricultural insurance have expanded over the years.

Historically, agricultural insurance evolved from hail insurance in the last century, when farmers joined together in risk-sharing societies in order to protect their crop income and thus survive the misfortune of hail. The scope and coverage of agricultural insurance has been expanded in stages and now includes not only extended hail cover and other natural perils, but also business interruption and liability in this area.

Agricultural insurance development remains uneven across countries.

Despite this, agricultural industries are generally under-serviced from an insurance standpoint, and this is particularly so among developing economies. In 2005, it is estimated that agricultural insurance premiums from emerging markets totalled around USD 1.1 billion, implying a penetration of no more than 0.01% in GDP terms and constituted less than 20% of the global total. In contrast, industrialised economies, despite their lower reliance on agricultural sectors, enjoy higher penetrations.

Figure 15
Agriculture insurance premiums in % of total and agricultural GDP



Source: Swiss Re Economic Research & Consulting

Agricultural insurance at different stages in emerging markets

The features of agricultural insurance regimes in emerging markets vary significantly. For example, well established programmes are in place in the largest Latin American economies (ie Argentina, Brazil and Mexico), while in Eastern Europe they are not widespread. In Asia and Africa, countries like India and South Africa have long-standing programs while others like Indonesia have no formal regime to speak of. In many markets, agricultural insurance development is linked to credit protection, where coverage is a prerequisite for farm loan application.

Agricultural insurance is politically sensitive in many markets.

Most common products are named-perils policies.

Where regimes are established, they typically involve both private and public-sector participation, given that agricultural issues often attract intense political scrutiny. Exceptions can be found, though, like in South Africa and Argentina, where private initiatives have the upper hand. The fact remains that private sector suppliers are capable of servicing the agricultural sector, but government involvement can also help to improve market conditions, for example by making insurance mandatory to counter adverse selection and by providing the necessary infrastructure.

The most common products are named-perils policies, but more sophisticated ones are being commercialized, and multi-peril covers are common features in some markets (eg Brazil, India, and Ukraine). Also, parametric structures are being used more and more in emerging markets as an effective way of providing protection while at the same time reducing exposure to moral hazard and adverse selection. In terms of premiums⁵, Asia is estimated to account for 40% of overall agricultural insurance business in the emerging markets, followed by Latin America (29%), Eastern Europe (21%) and Africa (10%).

Table 6
Agricultural insurance regimes,
regional overview

| | | Estimated 2005 premiums in USD million | Private insurer participation |
|----------------------------------|----------------|---|--|
| Asia | | 428 | |
| of which | India | 141 | ✓ |
| | South Korea | 69 | ✓✓ |
| | China | 94 | ✓✓✓ |
| Latin America | | 309 | |
| of which | Argentina | 92 | ✓✓✓ |
| | Brazil | 111 | ✓ |
| | Chile | 3 | ✓✓ |
| | Mexico | 30 | ✓✓ |
| Eastern Europe and Turkey | | 230 | |
| of which | Russia | 15 | ✓✓ |
| | Poland | 20 | ✓✓ |
| | Czech Republic | 30 | ✓✓ |
| | Hungary | 20 | ✓✓ |
| | Slovenia | 12 | ✓✓ |
| | Slovakia | 15 | ✓✓ |
| | Turkey | 36 | ✓✓ |
| Africa | | 103 | |
| of which | South Africa | 60 | ✓✓✓ |
| | Nigeria | 1 | ✓ |
| | Morocco | 2 | ✓✓ |
| | Mauritius | 19 | ✓ |
| Total emerging markets | | 1 077 | |

References

- ✓ Low: low participation on behalf of the private insurers, high support from governments
- ✓✓ Medium: some kind of government support (eg subsidies)
- ✓✓✓ High: No support on behalf of the government

Sources: National insurance authorities, Swiss Re Economic Research & Consulting

⁵ Agriculture insurance premium figures are provided by national insurance authorities or insurance associations. They include premiums from all sub-branches of agricultural insurance. Estimates by Swiss Re Economic Research & Consulting apply for countries where no premium statistics are available. In some markets, distortions are possible because some premiums may be reported under other lines of business (eg Chile) or because not all agricultural insurance business is reflected in the insurance reports by the regulatory authorities (eg Mexico).

Major classification of agricultural insurance

Agricultural production is unmistakably risky by nature. Generally, while in industrial production the main risk factors are the (un)availability of resources and sales potential, agriculture has both these risks, plus the factors of “weather” and “ecology”. Unlike agricultural products, consumer goods for daily use are produced in factory buildings which are well protected from and hardly influenced by the environment. By contrast, a field of grain can be destroyed by natural hazards such as hail, drought, flood or plant diseases at any time between germination and harvesting. The risks in livestock production are also uncertain, where epidemic diseases can severely affect production. As a result, agricultural insurance is characterized by wide fluctuations in loss experience. The underwriting risk of random fluctuation, ie the risk of differences between the actual and the expected loss experience, is consequently significant. The following listed the major classification of agricultural insurance.

Crops and horticulture: covers for all types of crops, fruits, flowers and vegetables. This can come in the following formats:

1. Single-peril crop insurance – indemnifies owners of certain growing crops, or tenant farmers having an interest in such crops, for loss or damage due to hail and any other causes of loss or perils provided for in the policy.
2. Multi-peril crop insurance (MPCI) – provides crop insurance protection for growers of certain kinds of crops. Coverage is written on a special cause-of-loss or all-risk basis.
3. Revenue coverage (price and yield).
4. Parametric covers or index covers – covers losses in yield due to a readily observable random variable that is highly correlated with the particular crop yield, normally rainfall, irrigation water flow, days with temperature above or below a certain threshold.
5. Quality guarantee – covers commercial standards established by the reference markets.
6. Weather derivatives – financial instruments, the value of which is determined by the performance of an insurance-related index and where this index is based, for example, on claims development for certain risks related to specific weather conditions.

Greenhouse: comprehensive coverage for material damage to structure, glass, equipment and plants as a result of fire, windstorm, weight of snow and equipment failure.

Livestock: generally protects the owner against losses resulting from death or involuntary destruction due to disease or accidental injury. Business interruption covers have also been developed, specifically for large-scale cattle, pig and poultry operations.

Horses, bloodstock and pets: covers individual animals of the most varied species, but in most cases equines, whether pleasure horses or bloodstock. The cover is triggered by disease or accident causing death or permanent disability.

Forestry: covers standing timber and plantations. Here, the most important covers are against fire and windstorm. Extended covers are becoming increasingly popular and may include flood, hail, weight of snow, insect infestation, and damage caused by domestic and wild animals.

Aquaculture: this is the breeding and raising of aquatic animals, whether in inland ponds or offshore in coastal waters. It covers mortality or loss of fish stock due to meteorological events, diseases, pollution, algae blooms and escape from damaged installations.

Regional agricultural insurance premiums amounted to about USD 309 million in 2005.

Latin America

Latin America houses some of the more sophisticated agriculture and food production systems among developing economies. The region has benefited not only from expanding global demand for its outputs but also from the proliferation of regional trade agreements (notably MERCOSUR, NAFTA and some bilateral accords) that lowered trade barriers for its farm products and gave it a head start in commercial farming. Rising capital inflows have changed the structure of food production and highlighted the need to be properly protected (in some cases as a prerequisite for business development) through other risk management measures in addition to crop diversification. The region also has an extensive rural credit infrastructure dominated in some countries by state-sponsored institutes that support the development of agricultural insurance. In 2005, premiums are estimated to have amounted to USD 309 million or 0.9% of the total non-life premium volume. The three biggest economies in the region (Argentina, Mexico and Brazil) are estimated at USD 240 million⁶, implying a penetration of 0.01%. Brazil (USD 110 million) and Argentina (USD 92 million) accounted for the bulk of agricultural insurance premiums in the region, and thanks to higher commodity prices and favourable exchange rates they reported annual premium growth of 4% and 9%, respectively, during the period of 2000–2005. On the other hand, recent changes made to the Mexican system have led to a near 20% decline in reported premiums to USD 30 million, mainly in the livestock segment.⁷

Different levels of government participation

A review of the region's major economies reveals vastly different regimes in terms of public sector participation, ranging from no government intervention in Argentina⁸ to active participation via subsidies in Brazil and multi-layer participation in Mexico (for further details of the agricultural structures in Mexico, see the section on Models). At the same time, institutionalised emergency plans are in place in these countries, but features are once again different.

⁶ This is down from an estimated USD 330 million in 2004. Due to the small scale of the agricultural insurance figures reported by the supervisory authorities, the remaining big countries (Chile, Colombia and Venezuela) are not taken into account for further analysis. In some countries, figures may be distorted because some premiums are reported under property lines (eg Chile, where the bulk of forestry business is counted as property business) and some insurance figures are not reflected in regulatory reporting at all (eg Mexico).

⁷ In 2005, limitations in subsidy distribution for livestock coverage caused shrinkage of this sub-branch which was mainly covered by private insurance companies. It should be noted that the actual agricultural insurance market in Mexico goes beyond the figures provided by the supervisory authority CNSF, as not all premium incomes are reflected in the official figures. The missing part may be substantial.

⁸ However, there are some provincial trends under way (eg grape coverage in Mendoza province).

Argentina

Argentina essentially has a private-sector driven market underpinned by rapid commercialisation of the country's farm sector over the past decade. One specific development was its adoption of a fixed-exchange-rate policy in the early 90s, which put competitive pressure on its agricultural sector and promoted consolidation of many hitherto small family businesses into managed companies. In addition, on the back of increasing investment opportunities in the sector, the so-called "sowing pools" were created, which are typically investment funds that invested in the sector and, taking advantage of economies of scale, extended to marginal zones. The entry of multinational companies (eg Monsanto, Aventis and AgarCross) is another agent bringing changes to the industry model by providing new technologies and offering funding to the local sector. Against this favourable backdrop, agricultural insurance is becoming popular as a means of backing up large-scale sales and credit transactions. Thanks to the success of its market-based premium regime, Argentina boasted a premium penetration as high as 0.05% of GDP in 2005.

By comparison, Brazil and Mexico both have hybrid systems of agricultural insurance that feature government-sponsored schemes alongside private participation.

Brazil

In Brazil, the state-sponsored PROAGRO scheme offers relief to loanee farmers affected by natural catastrophes. Despite having grown by 9% per year during the period 2000–2005, penetration is low at 0.01% of GDP. While commercial agricultural insurance is also available, demand has been depressed by the lack of risk perception and relatively high premiums. On the supply side, furthermore, high expenses, insufficient income (in particular in rural areas), lack of information and specialized know-how on the agro-insurance chain are to blame. However, starting in 2005, the government has initiated a plan to subsidise private insurance premiums, which is expected to render insurance more accessible to the farming population.

Mexico

In Mexico, crop insurance started as a prerequisite for loan approvals by the state-owned bank, an arrangement that was later extended to other financial institutions. The current structure is characterised by the co-existence of private insurers and hundreds of locally-originated mutual insurance funds (Fondos). The state-owned insurer Agroasemex engaged in direct business until 2001, but its current role has been refocused towards offering technical assistance and providing reinsurance support to the private and Fondo operators.⁹ While penetration is at a relatively low 0.02%, it does not accurately reflect the development of the agricultural segment.¹⁰

The latest changes to the system point to further room for private-sector growth going forward. The Federal Insurance Act of 2005 allows insurance funds to obtain reinsurance coverage from companies other than Agroasemex. The authorities also aim to improve data collection to facilitate future product development through the creation of "Organismos Integradores Estatales/Nacionales".

⁹ More detailed analyses of the Mexican system are included in the next section of this report.

¹⁰ As the premiums paid by the funds are not taken into account within these figures, the missing part may be substantial.

Named-perils products are the mainstay.

Named-perils products account for the bulk of premiums, but more sophisticated products are also common. In Argentina, for example, almost 95% of the total premium volume comes from hail coverage, whereas in Mexico and Brazil multi-peril cover is also very popular. In respect of parametric structures, private initiatives can be observed in Brazil, while in Mexico similar cover is currently being offered by Agroasemex for agriculture and is under analysis for livestock.

Outlook

Going forward, agricultural insurance development in the region is supported by increasing trade and continuing efforts by multinationals (eg Inter-American Development Bank, World Bank) and the insurance industry to strengthen local access to financial tools, including insurance. Pro-active government policies are also key drivers.

In Brazil, premium subsidies recently approved are expected to underpin rising demand. The anticipated opening of the Brazilian reinsurance market will also help to bolster the supply side. Still, it will take some time for the Brazilian market to fully benefit from the above factors: land expanse in Brazil is a positive and negative variable when it comes to development. Large distances make assessment, information-gathering and control difficult at the current infrastructure level. Further investment in know-how, technical and commercial capabilities and claims settlement is needed to fully exploit these opportunities. In Mexico, last year's changes in the Federal Insurance Act, allowing insurance funds to obtain coverage from insurance/reinsurance companies other than Agroasemex, is expected to boost the market while at the same time instilling more competition. At the same time, several projects aiming to provide coverage for the small commercial farmers that are not directly covered today could help to broaden the insurance base. In Argentina, since it is quite a mature country in terms of insured land, no exponential growth is expected. To further promote the line of business, government initiatives (via eg information-gathering, tax incentives, premium subsidies) could be considered, as is the development of more comprehensive products above and beyond the traditional hail policies.

Asia

Agricultural insurance in Asia, with premiums of USD 428 million in 2005, is still in its infancy.

Agricultural insurance in emerging Asia generally lags behind that in Latin America and is highly uneven across economies. Total agricultural insurance premiums in the region are estimated at USD 428 million in 2005 or 0.6% of the total non-life premium volume, but penetration is still just 0.01% of GDP. The three biggest economies (India, China and South Korea) accounted for more than 70% of the total, or USD 304 million.

The region's ongoing financial liberalisation has encouraged banking and credit institutions to expand their networks into the more remote rural areas, thus providing a potential springboard for promoting insurance where cross-selling (eg bancassurance and micro-insurance) is allowed.

In general, agro-insurance regimes in Asia, where they exist at all, are dominated by state-sponsored schemes. However, recent years have seen more countries introducing pilot schemes or setting up specialised institutions to provide commercial agricultural insurance as part of their policy focus on promoting rural income growth. Growing risk awareness among policymakers and farming communities in the wake of the 2004 South Asia tsunami also provided a catalyst for stronger risk management against such hazards.

India

India's agricultural insurance regime dates back three decades. What in an early stage had been linked to short-term crop credit later developed into the current structure. Its newly-formed entity, the Agricultural Insurance Company, now administers two major state-run agricultural insurance schemes: the National Agricultural Insurance Scheme (NAIS) that offers protection for core food crops and commercial/horticultural crops, and the Farm Income Insurance Scheme (FIIS) that provides income stabilisation against below-average yields. Both schemes are heavily subsidised, and NAIS is compulsory for loanee farmers. Despite this, penetration has been low, with only 10% of sown area and 7% of farmers covered. Besides these schemes, the government, in the aftermath of the 2004 tsunami, has sought to improve insurance protection through stepped-up efforts to promote micro-insurance. Recent years have also seen more private insurers offering crop insurance products.

China

China's current agricultural insurance regime can be traced back to 1982, when the then state-run PICC started underwriting a variety of forestry, cattle and fishery risks. Business experienced strong growth – from a low base – at first. It later deteriorated as it struggled to fulfil its dual objectives of achieving commercial viability while at the same time functioning as a social security safeguard for the primary sector, which had the effect of aggravating the loss burden despite very limited state support. At the same time, low risk awareness, small-scale farmsteads and low operating incomes earned by most farmers on the demand side, and – until recently – insufficient resources (in terms of technical expertise, data and staff resources) to develop agricultural insurance on the supply side are restraining the sector's growth. In this context, the customer base has shifted towards larger agricultural corporations such as the tobacco industry in Yunnan or cotton plantations in Xinjiang that can better afford the expense than small and individual farmers.

Of late, however, the government has made rural area growth a key objective of its eleventh Five-Year Plan for 2006–2010 and is re-examining the possibility of greater policy support for the agricultural insurance sector. In line with this shift in policy, the government granted licenses to three professional agricultural insurers in 2004 – one foreign, one domestic incorporated and one domestic mutual insurer – and ran pilot schemes in selected provinces to try to come up with a viable private/public partnership scheme to offer agricultural insurance. Several provinces such as Shanghai, Heilongjiang, Hebei and Inner Mongolia are reported to be experimenting with subsidised insurance on dairy products. Initial results are favourable, with premiums in the first nine months of 2006 already showing a strong rebound from the declining trend seen in previous years.

South Korea

In South Korea, the country's agricultural mutual cooperatives, known as Nonghyup, have had a long history of offering both life and non-life insurance to the rural community. In 2001, the federation introduced a crop insurance programme that provides natural-disaster coverage in six crops: apple, pear, peach, grape, sweet persimmon and mandarin. The program gets reinsurance support and premium subsidies from the government and covers 70–80% of damage. The response has been favourable, with a latest reported subscription rate of 24.5%. Besides crop insurance, a livestock insurance program has also been established over the past couple of years.

Rest of Asia

In South East Asia, the Philippines has a long history of agricultural insurance development. The Philippines launched its agricultural insurance regime in the early 80s, when the government formed the Philippines Crop Insurance Corporation (PCIC) to provide rice and corn coverage to borrowing farmers on a fixed, subsidised rate structure. The scheme, compulsory for loanee farmers, eventually proved sustainable, and the product range was expanded to cover livestock in 1988, high-value commercial crops in 1993 and agriculture equipment in 1998. In Vietnam, the state-owned Vietnam Insurance Corporation (BaoViet) had some initial success in the 80s, but eventually had to withdraw due to rising administrative costs and adverse selection issues. The government nonetheless still provides limited livestock insurance under its agriculture ministry subsidiaries. Elsewhere, Malaysia's agricultural sector has access to some crop insurance products from private insurers, but penetration has been limited due to the inclination of some large plantations to self-insure and the region's relatively low exposure to natural hazards. Thailand and Indonesia both have no formal agricultural insurance regime in place but, in the wake of the 2004 tsunami, have started to strengthen a microfinance infrastructure that could serve as a breeding ground for some local pilot schemes.

Products

In general, named-perils products are the most common covers in the region, with specific riders in areas heavily exposed to certain risks (eg spring and autumn frost in South Korea). In India, for example, the FIIIS scheme insures both production and market risks, therefore guaranteeing minimum income. It has also had some success with weather-index and related derivatives which will provide insurers with the supporting infrastructure for other innovative products.

Outlook

The ongoing changes in agricultural regimes in many countries in the region are setting the basis for the agricultural industry to grow. While still at nascent stage, a shift in policy focus from ensuring self-sufficiency to enhancing farm incomes and even promoting industry competitiveness is gaining ground. Farm consolidation and diversification into high-value segments and, in particular, increasing adoption of commercial practices such as contract farming and crop diversification in the region should stimulate demand for more sophisticated risk solutions from commercial insurers. Still, the path to sustainable development will be influenced by the level of commitment of the various governments and the degree of participation by the private sector.

In India, for example, the insured land area is likely to increase going forward, as more private insurers target rural-sector products to expand their market share and to comply with a regulatory obligation to have certain level of rural business. Also, micro-insurance legislation is being framed as an alternative providing coverage to the agriculture sector.

Elsewhere, in South Korea, plans are under way to extend coverage to rice, the most important local food crop. The National Emergency Management Agency is also reported to be preparing natural-disaster-related insurance covering barn and greenhouse damage that could provide some impetus for growth.

Eastern Europe and Turkey

Regional agricultural premiums of about USD 230 million in 2005

In Eastern Europe and Turkey, premiums written in agricultural insurance amounted to an estimated USD 230 million in 2005.¹¹ This is about 0.6% of direct non-life premiums written or 0.01% of GDP in this region. This is in line with the penetration level recorded in Asia. The biggest agricultural insurance market is Turkey (USD 36 million in 2005), followed by the Czech Republic (USD 30 million), Hungary and Poland (USD 20 million each). Collectively, these countries accounted for about half of the agricultural insurance premiums written in 2005. Insurance schemes as known in other emerging-market regions are not widespread in Eastern Europe and Turkey.

Turkey

The size of agricultural insurance in Turkey reflects the country's cultivated area, which ranks second in the region after Russia. Notwithstanding this favourable starting position, the development of agricultural insurance has seen mixed results in the past years with volatile growth in the 1990s as a result of price competition. Overall, premiums written stagnated in real terms between 1990 and 2000. Alongside the macroeconomic recovery and the Agricultural Reform Implementation Project (ARIP)¹², the agricultural insurance sector has been on a more robust growth trajectory since 2002. For the period 2000–2005, premiums written grew by 18% inflation-adjusted. In addition, access to subsidised agricultural credits has also had a positive impact on demand for agricultural insurance, even though to date only 10–15% of premium income is generated in connection with bank loans.

There is no compulsory agricultural insurance scheme in Turkey. However, there are tax exemptions for every sub-branch of agricultural insurance. For a couple of years, Turkey has been thinking about introducing a private pool solution. In February 2006, the Council of Ministers adopted the legal framework for this Agricultural Insurance Pool. Since June 2006, a subsidy of 50% of the insurance premium has been provided from the budget.¹³

¹¹ The estimate excludes premiums covering agricultural property and liability. Premium figures are available for Croatia, the Czech Republic, Hungary, Poland, Slovenia and Turkey.

¹² The purpose of the Agricultural Reform Implementation Project (ARIP) is aimed at "reducing artificial incentives and government subsidies, and substituting a support system that will give agricultural producers and agro-industry incentives to increase productivity in response to real comparative advantage." (<http://web.worldbank.org>). ARIP was made effective in July 2001.

¹³ For more information see TARSIM, "New Agricultural Insurance System in Turkey".

Eastern Europe

The development of agricultural insurance in Eastern Europe in the nineties was constrained by structural changes witnessed in the agricultural sector following the demise of communism. Later on, integration of the Central European countries into the European Union has made EU subsidies available to their agricultural sector. This made it possible to improve efficiency and attract foreign investment – particularly from Denmark and the Netherlands. As a consequence, risk awareness has been increasing – because foreign investors want the same standard of insurance as in their home countries, which in turn also raises market standards. Furthermore, the higher capital stock in the sector also induces stronger insurance demand. Growth of agricultural insurance in the new EU member states is thus thought to have been picking up recently.

There are no compulsory insurance schemes in any of the Central European countries. Insurance premium subsidies, on the other hand, are more common. Today they are paid in the Czech Republic, Slovakia, Russia, the Ukraine and Romania and usually range between 20–50% of insurance premiums. Multi-peril crop insurance is currently a topic of discussion in Poland – if implemented, it will feature subsidies. The drawback with subsidies is that they are subject to the government's budget constraints. In Russia, an Agricultural Insurance Pool has been set up, comprising 30 large insurance companies.

Single and multi-peril covers dominate.

The most common agricultural products are single-peril covers. In Russia and the Ukraine, multi-peril covers also account for an important share in the portfolio. Livestock insurance including animal diseases is of significance in the Czech Republic, Slovakia and Poland. More sophisticated products like revenue coverage or weather derivatives are not features of these markets.

Outlook

In Turkey, the introduction of the Agricultural Insurance Pool is expected to be the ignition spark for agricultural insurance: TARSIM, the company managing the pool, estimates that premium income will amount to USD 136m in 2007, which would be almost four times the premium volume written in 2005.

In Eastern Europe, the outlook is mixed: it is most favourable for EU member countries with predominantly large-scale landed property such as the Czech Republic or Slovakia. The large farm sizes, availability of EU subsidies and relative production cost advantages vis-à-vis "old" EU members have made these countries an attractive target for foreign investors, who in turn are demanding insurance cover to protect their investments.

On the other hand, countries with a predominately small-property agricultural sector and thus with a high level of subsistence farming – like Poland, Bulgaria or Croatia – will face the challenge of reforming their agricultural sectors to become competitive at a global level. Political resistance may hold back the pace of this process, particularly in non-EU member states. Therefore, it will take longer to exploit the potential of agricultural insurance in these countries. A general lack of financial resources – as in Romania or the Ukraine – is further hampering demand for agricultural insurance.

For the insurance sector to develop in these countries, incentives to take out insurance are crucial. These may encompass a reliable subsidy system, the setting-up of pool solutions, easier access to agricultural insurance, and programmes for increasing risk awareness. This is even more important against the background of countries which are about to enter into WTO agreements or become EU members possibly having to discontinue certain forms of financial transfers to farmers.

Africa

Market development supported by multinational institutions

Much of the development of agriculture insurance in Africa is currently being supported by active participation from multinationals as part of their ongoing efforts to channel assistance to the region's economic progress. Specifically, institutions such as the International Finance Corporation (part of the World Bank Group) are constantly working with local governments to conduct research and devise tools for agricultural risk management.

South Africa

Within the region, South Africa is the largest agricultural producer, and its experience with crop insurance can be traced back to some pooling arrangements in 1929. The current regime started in 1979, when private insurers launched multi-peril policies, with the government subsidising 25% of the premiums. The scheme suffered from low participation, however, and was discontinued in the late 80s. Private agricultural insurance nonetheless remained, and premiums totalled an estimated USD 60 million in 2005. Currently, there is no government participation and no mandatory insurance coverage required nor subsidies being provided to promote the sector. Notwithstanding the above, the penetration rate in South Africa is 0.03% relative to GDP, which is high by regional comparison. Risk awareness, climatic variability and crop-commodity prices tend to drive the demand for agricultural insurance. Providers of agricultural production capital require producers to avail themselves of agricultural insurance protection where collateral is deemed inadequate. Such producers currently comprise approximately 20% of the country's commercial crop farmers. However, there is a lack of insurance products which meet the needs of emerging small-scale farmers in transition to full-scale commercial production.

Rest of Africa

Elsewhere in Africa, the development of agricultural insurance is in some cases also linked to access to credit. This is the case in Nigeria, where the state-owned Nigerian Agricultural Insurance Corporation (NAIC) is mandated to provide insurance coverage for farmers, especially for loans granted by the state banks or guaranteed by the state. Likewise, in Morocco, the government, in partnership with the insurance industry, put a traditional crop insurance program in place in 1995. This was a yield-insurance program, mandatory as of 1999 as a prerequisite for granting credit, indemnification being triggered by a ministerial declaration of official drought.

Another example of an agricultural insurance regime in Africa comes from Mauritius, where the focus is on particular commodity plantations, in this case sugar. The “Cyclones and Drought Insurance Fund” created in 1945 later became today’s Mauritius Sugar Insurance Fund (MSIF). Coverage during inception was limited to damage to sugar crops caused by cyclone, drought and excessive rain but was eventually extended to include fire in 1974 and yellow spot disease in 1984. The program is noted for its sophisticated, formula-based approach that dynamically accounts for the loss experience of individual insureds, with each grower ranked and scaled, for each insurance/growing season, for the level of premium to be paid and the indemnity level to be received. Penetration is high, with premiums of USD 20 million, implying a penetration of 0.3% of GDP.

Products

In South Africa, premium comes mainly from named-perils products. In 2002 South Africa’s first weather-derivative offering was launched. The cover gave one of South Africa’s leading producers of deciduous fruit protection against early spring frost. Other weather-derivative products have since also been developed and underwritten for the grain crop sector. Elsewhere, some weather initiatives are gaining ground, for instance in Morocco, where the government (in response to heavy losses impacting the existing program) is exploring the feasibility of index-based products.

Outlook

Growth is likely in the area of non-traditional products that offer an alternative, efficient and cost-effective crop-failure insurance program that can be easily reinsured and distributed to individual farmers of various sizes. A growing number of private/public initiatives are also under discussion, in particular non-traditional solutions (ie agricultural weather insurance products) in various countries in Africa. Climate change, risk awareness mainly on the part of commercial farmers, and an anticipated increase in the frequency and severity of drought in the southern African area highlight the need for protection. Furthermore, many of the region’s countries boast relatively high meteorological data quality, which provides a sound base for risk underwriting and the construction of indexed products.

Learning the lessons – what governments and insurers can do

A mixed picture with some success stories

The above overview of the current implementation of agricultural insurance paints a mixed picture with some of the documented regimes fraught with costly detours and only a few qualifying as outright success stories. Some common impediments to the development of agricultural insurance are:

- the risk of high-severity losses: a single event to trigger region-wide losses
- asymmetrical information leading to adverse selection and moral hazards
- high administration costs due to extra underwriting and claims adjustment effort inherent in agricultural products, plus exacerbating factors such as a dispersed client base
- mismatch between farmers' self-perceived vulnerability and their actual exposure – the "This cannot happen to me" mentality
- financial constraints/affordability
- inadequate legal and regulatory frameworks
- distorted government incentives that promote ex post disaster relief over ex ante risk financing/management
- limited access to the international insurance/reinsurance market that results in lack of capacity and innovation
- lack of infrastructure support, from information-gathering to distribution

Various risk-mitigation measures needed

Instruments are available for mitigating the impact of these pitfalls, but they are not a panacea. Administratively, some form of compulsory participation plan is effective in reducing adverse selection. Financially, subsidising premiums could help to induce extra demand but would depend on a clear political will.

Models to illustrate success factors

While publicly-administered plans are common and have their merits, they can also be the cause of the problem if they are designed with poor arrangements for risk-sharing between the private and public sectors. In practice, even publicly-administered schemes are not guaranteed success, especially when they have to apply "one-size-fits-all" standards to cater to widely different regional and local interests. Authorities in low-risk regions, for example, may perceive a flat national rate structure as an implicit tax on their own constituencies and may sanction non-compliance. This leads to a vicious cycle of persistent losses and subsidies that unfortunately have become the earmark of many of these regimes. Nonetheless, among the widely varied experience of different markets, two models stand out by virtue of their demonstrated viability in terms of penetration and profitability. The following looks into these models – Spain and Mexico – with a particular focus on their regime designs.

Spain – an example of private/public (PP) partnership

Spain – public/private partnership

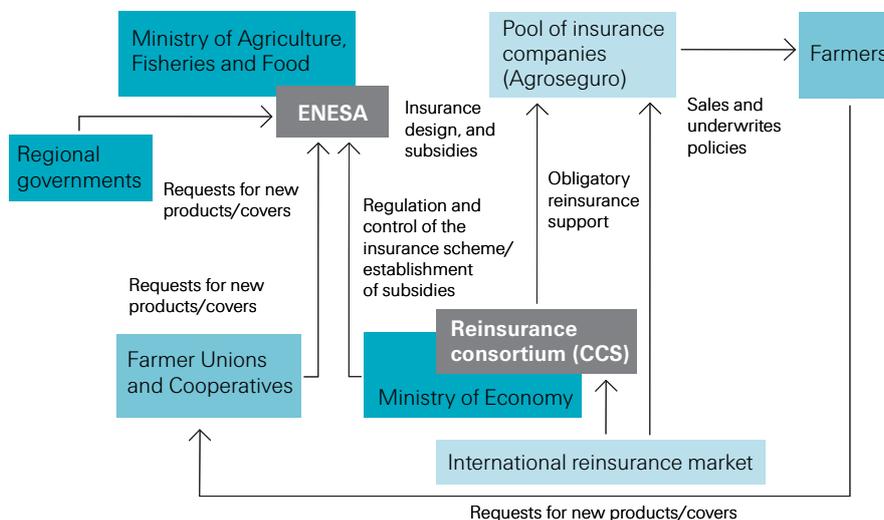
Despite the fact that Spain does not fall into the emerging market category, its agricultural insurance model is often cited as a potential model for emerging markets. Created in 1978 and built on previous experience that was not always a success story, the current model is a private/public partnership involving three key players:

- Entidad Estatal de Seguros Agrarios (ENESA), an agency of the Ministry of Agriculture, Fisheries, and Food. Its key functions are to i) propose and implement the Annual Agricultural Insurance Plan; ii) propose in coordination with Agroseguro the minimum technical conditions of cultivation, insurable yield,

insurance prices and deadlines for subscription of the insurance policies, iii) monitor insurance plans, iv) carry out studies for risk prevention measures and coverage, v) promote insurance, and vi) act as an arbitrator in disagreements between insureds and insurers.

- Agroseguro, a pool of sixty private insurance companies, controls and administers insurance policies. It also manages the payment of reinsurance to CCS and the collection of subsidies.
- Consortium for Insurance Compensation, (Consortio de Compensación de Seguros [CCS]), is a public enterprise under the control of the Ministry of Economy that provides obligatory reinsurance. It also has a stake in ensuring profitable underwriting through a predefined profit-sharing scheme.

Figure 16
The Spanish model



Source: Swiss Re Economic Research & Consulting

How it works

Each year, ENESA draws up a plan of operations which stipulates which commodities/risks will be insured, ranges of premium subsidies and deadlines for purchase. Agroseguro specifies terms and conditions for each product and makes regional distinctions in premium rates in line with the level of risk exposure and the cost of administration and reinsurance. It then sells the policies through its network of 60 private insurance companies. Mandatory reinsurance is purchased from CCS.¹⁴ For its part, CCS can buy further protection on the international reinsurance market.

¹⁴ CCS retrocedes a major part of its exposure to the international reinsurance market. Since the reinsurance program provided through CCS does not take over all of the pool's exposure, Agroseguro has the possibility of obtaining protection for its retention from the international reinsurance market.

The objectives of the program are to achieve universal coverage, insure all agricultural risk, and provide income stabilisation, while maintaining actuarial soundness. In addition, the system is highly participatory and is marked by involvement of farmers in product design and by constant change and reformulation based on feedback from farmers, agents, cooperatives, and insurance companies. Some of the other tangible strengths of the system include:

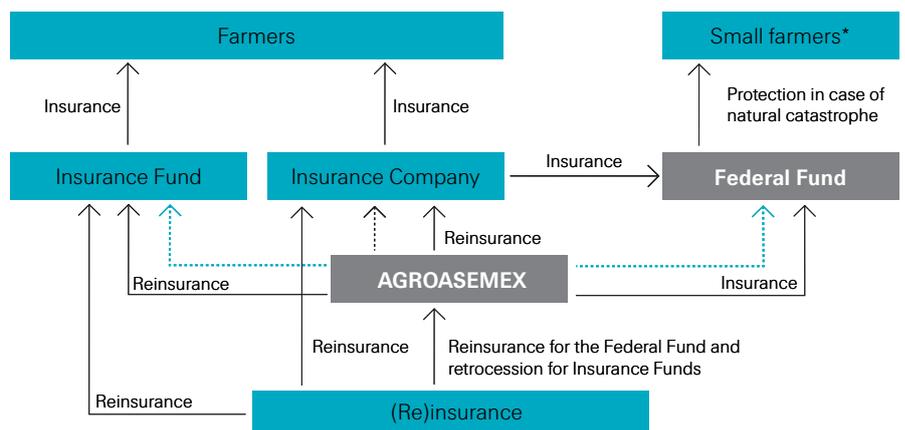
- a comprehensive agricultural system that is capable of covering a broad range of losses in agricultural and livestock production
- private and public entities united under one system, providing a unique platform for developing know-how, products, and risk-sharing
- cost reduction due to centralized administration
- affordable for farmers thanks to the state premium subsidy
- highly diversified portfolio with relatively low volatility in results

Mexico – an example of PP partnership with individual participation

The Mexican model is a hybrid system, a private/public partnership in which government involvement is manifold, as shown in the graph. This legal framework also leaves room for individual participation. The government not only subsidizes premiums but also provides reinsurance coverage (via Agroasemex) to mutual funds, while at the same time providing technical assistance and promoting development of the rural sector. Agroasemex is also charged with developing innovative products, while private-sector insurance companies are free to sell any kind of product and service.

Mexico – individual/public/private partnership

Figure 17
The Mexican model



.....> subsidies distribution

* protected via a public fund. The state is the beneficiary in case of natural catastrophe.

Source: Swiss Re Economic Research & Consulting

How it works

Farmers can join together under a mutual fund structure to obtain insurance protection. Although insurance protection is not mandatory, strict fund regulation helps its enforcement.

The law mandates that funds should guarantee 100% of their liabilities; this may be done via their own technical reserves, which in general are minimal compared to the responsibility they assume, and by obtaining reinsurance (until 2005 via Agroasemex).

The income generated by the fund is distributed as follows:

- 20% of total premiums (including Federal Subsidy) is paid to reinsurers as the average cost of reinsurance coverage
- 25% of the remaining 80% may be dedicated to paying operating expenses
- the remaining 60% goes to current reserves (RRC) to pay losses. If there is anything left over after the losses have been paid, 70% of the remainder goes to a social fund for the benefit of the members, 25% goes to the Special Contingency Reserves (REC) and 5% to the social reserve for labor-related obligations.

In the event of a loss, the capital is drawn down as follows: 1) current reserves are withdrawn; 2) contingency reserves; 3) reinsurance.

This system is attributed the following strengths and advantages:

- promotes the development of the agricultural sector
- reinvests capital in the sector, mainly through the fund structure
- makes cover affordable via the premium subsidy (100% for the Federal Fund)
- provides freedom to design and develop products that could lead to better and tailor-made insurance protection
- develops know-how
- reduces (mainly in the case of the mutual funds) moral hazard and undue payments

Private/public partnership to balance social security and economic efficiency

In the systems presented, promoting agricultural development is a common and immediate denominator behind their structures. The more advanced models incorporate private/public insurance partnerships as a key element for further market improvement. Experience with the more successful market regimes has highlighted the viability of private/public partnership in delivering a balanced mix of social security and economic efficiency. For example, the Multi-Peril Crop Insurance program in the US stresses a system supported by government funding but delivered through the private insurance community. Leaning on the latter's actuarial expertise and product development skills, these systems are more apt to appeal to their potential clientele and to mitigate the problems of adverse selection and other incentive distortions that plague purely state-run programs. The regional overview suggests that most emerging markets have not yet exploited, or even explored, the full benefits that an efficient, commercially viable insurance regime can yield for their agricultural development.

Improving viability

Public policies to empower private initiatives

Proper support from government policy can go a long way towards promoting the commercial viability of agricultural insurance. However, policymakers should also be aware of the potential distortion that even indirect intervention can bring to the market. Arguably, governments can play a less contentious role in strengthening private sector incentives by devoting resources to various infrastructure issues.

Scalability – a key challenge in agricultural insurance business

In particular, agricultural insurance is challenged by the inherent spatial correlation among risk exposures that is typical of damage caused by natural events. Recent years have seen widening weather extremes and high-profile disasters like the 2004 Southeast Asia tsunami or the devastating consequences of the 2005 hurricane season that portend even higher potential losses ahead. Furthermore, underwriting agricultural insurance in emerging markets is notorious for high administration expenses. The main problem is the large proportion of small, family-based units operating outside the formal business domain, which greatly diminishes their serviceability via traditional insurance channels. In addition, insurers face other challenges including the generally poor infrastructure such as transportation and telecommunication, difficulties in loss data collection and product distribution.

Government's role in enabling private-sector insurance solutions

As a result, active risk management and monitoring are critical to ensuring the survival of any agricultural insurance regime. To this end, governments can help the industry to cope by improving meteorological data collection and establishing zoning guidelines that better reflect the regional variation in risk profiles. More importantly, allowing foreign players better access, either through direct participation or via risk transfer tools such as reinsurance, will go a long way towards enhancing the commercial capacity of the domestic agricultural-risk market.

Business viability improves as policy focuses on rural development ...

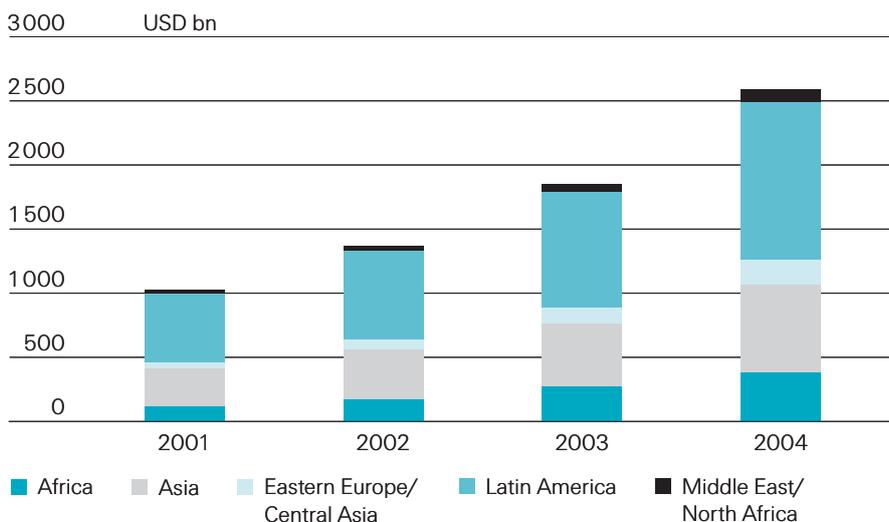
Meanwhile, agricultural development has rebounded as a major policy focus in many emerging markets, reflecting not only improving economic fundamentals facing the industry but also efforts to underpin sustainable development and counter income disparity and pollution. In Asia, for example, China's latest Five-Year Plan for 2006–2010 and India's latest budget both stress agricultural development as a major policy goal and point to stronger rural infrastructure investment ahead.

... and provides innovative funding options to the rural populace.

Further improvements also come from ongoing evolution in rural funding. This comes as governments and international development agencies absorb the costly lessons learned from previous regimes that focused on direct channelling of cheap agricultural credits and shift their emphasis towards microfinance programs that aim to lower transaction costs instead of interest rates. In particular, a viable microfinancing model has emerged over the years that stresses the value of efficient loan disbursement and market-based interest rates capable of covering both the lender's operating and financial costs. This model centres on setting up local-based microfinance institutes (MFIs) that operate on subsidised funding yet can reach the informal sector to which many rural economies belong.

While most MFIs started out as local platforms for loan disbursement, many have now expanded to provide additional products, including insurance, to meet other financial needs of the rural communities. Insurers should be able to tap the distribution capability of MFIs (as well as other NGOs), which are receptive to the idea of adding insurance to their product as a means of diversifying their highly concentrated loan portfolio.

Figure 18
Gross loan portfolio of MFIs by region



Source: The MicroBankingBulletin

Insurers can leverage on technology and innovative products to lower cost.

Improving technologies and market innovation also provide insurers with increasing venues for bringing underwriting costs down and managing their exposures. One example is the development of parametric, or standardised index-based, products such as area-yield insurance and rainfall insurance. Since these products base their payouts on external indices instead of the actual losses suffered by the insureds, they have the advantage of circumventing many pitfalls associated with traditional insurance products (moral hazard, adverse selection, claims adjustment) and could find increasing application in areas where the potential administration cost remains prohibitive for a formal insurance regime. A number of emerging markets like India are also developing tradable derivative instruments based on weather indices, thus allowing insurers to hedge their risk accumulation on the financial market.

Outlook and conclusions

Agriculture will remain an important economic sector in emerging markets.

Key growth drivers

The coming years will see more emerging economies being able to benefit from an expanding global market for their farm output as a result of ongoing trade liberalisation and increasing focus on rural development. To take advantage of these opportunities, however, they will have to strengthen their agricultural sectors in terms of both risk management and commercial incentives. By providing indemnification and risk-pricing functions, a vibrant agricultural insurance market can significantly contribute to achieving these goals. The current market size for agricultural insurance in emerging markets is estimated to be below USD 1.1 billion, but growth is likely to pick up in the coming years, powered by the following drivers:

- *High catch-up potential.* Considerable growth is expected to come from Asia, which has a large agricultural sector but very low insurance penetration. Countries like China that have endorsed policies for promoting rural sector income growth should see the strongest potential.
- *Adoption of "private/public" risk management models.* Even as many governments still play a dominant role in their risk management framework, more are widening the scope for private-sector participation to bring actuarial discipline to the system.
- *Financial deepening and innovation.* Developments in microfinance and parametric products allow insurers to side-step several major obstacles and offer "second-best" solutions to communities that otherwise would be too costly to service.
- *Higher risk awareness and the need to diversify.* Recent high-profile events, from the 2004 Southeast Asia tsunami to Hurricane Katrina, have raised awareness of the potential devastation that a region-wide event could wreak and may prompt more countries to tap international capacities for protection.

The combination of sound economic fundamentals and propitious national agricultural policies can enhance insurance penetration significantly. If governments and insurers adopt appropriate initiatives to bring insurance penetration in the emerging markets up to levels commensurate with more developed economies, the size of the agricultural insurance market could reach USD10 billion.

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