Private Disability Products

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Gen Re

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www.actuaries.org/HongKong2012/

What is "Disability Insurance“?

- Disability insurance **protects the earned income** of the insured person.
- A benefit is paid, when **the insured's ability to work** (and therefore the ability to earn a living) **is restricted** due to a disabling illness or injury.

➢ **How is the ‘in’-ability to work measured?**

Various definitions are used, e.g. being unable to …

- perform duties necessary to earn income
- perform one important duty
- work more than 10 hours per week
- earn more than 25% of pre-disability income
- perform activities of daily living
- perform a list of stated physical activities
- perform any / own occupation

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Disability and the economy

Recent trends in the German private disability insurance market

Alternative product concepts for disability coverage

Disability insurance claims can be a matter of choice

- Room for interpretation

  - Policyholder: Claim when utility from disability benefits exceeds that of working
  - Employer: May encourage claiming as an alternative to retrenchment
  - Insurer: Considers reputation vs. claim cost
  - Government: More/less generous social security benefits can influence popularity of government

Disability and the economy

- A number of studies has been done.
- Most studies showed a link between the frequency of disability and economy.
- Few studies can statistically quantify the relationship.
- But what is the direction of relationship?

Pro-cyclical

Economy up, disability rates up

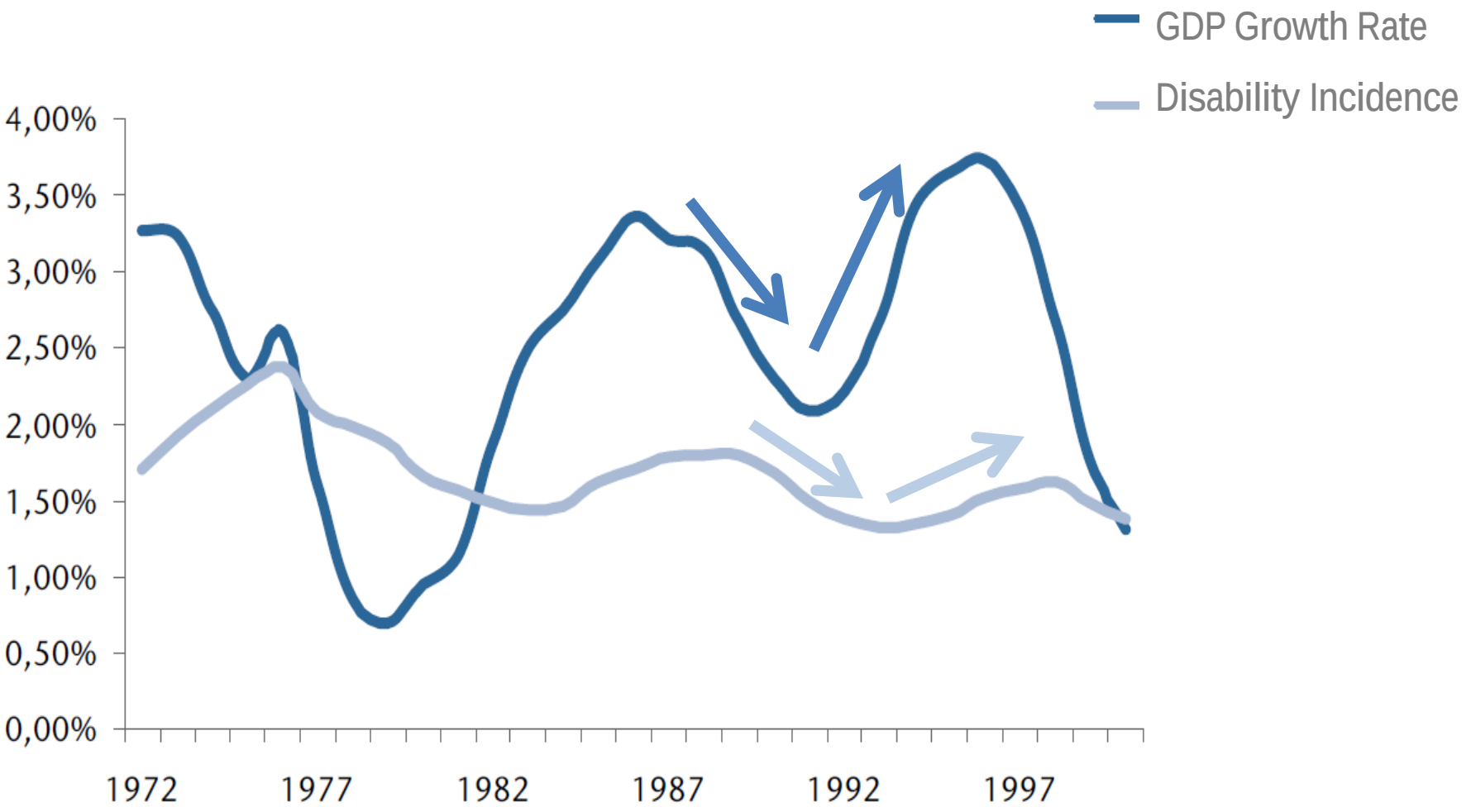
- Even 'unfit' lives are pulled into workforce
- People work harder
- Generous claims handling by social security system
- Less experienced workers

Anti-cyclical

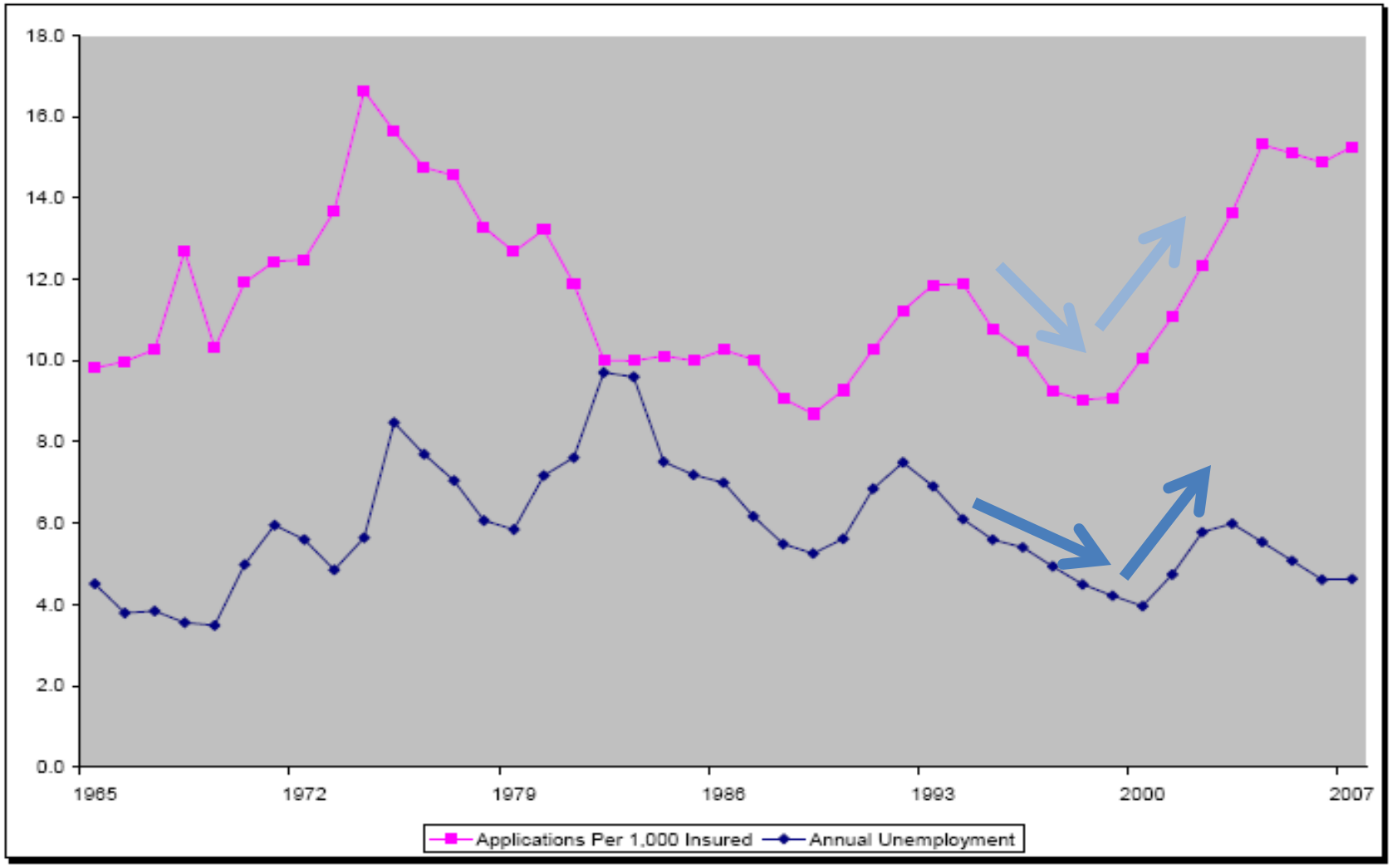
Economy down, disability rates up

- The "hidden disabled"
- Disability benefits used as alternatives to retrenchment
- Minor claims
- More work-related accidents

Pro-Cyclical example: Netherlands



Anti-Cyclical example: USA



Source: Social Security Administration & Bureau of Labor Statistics

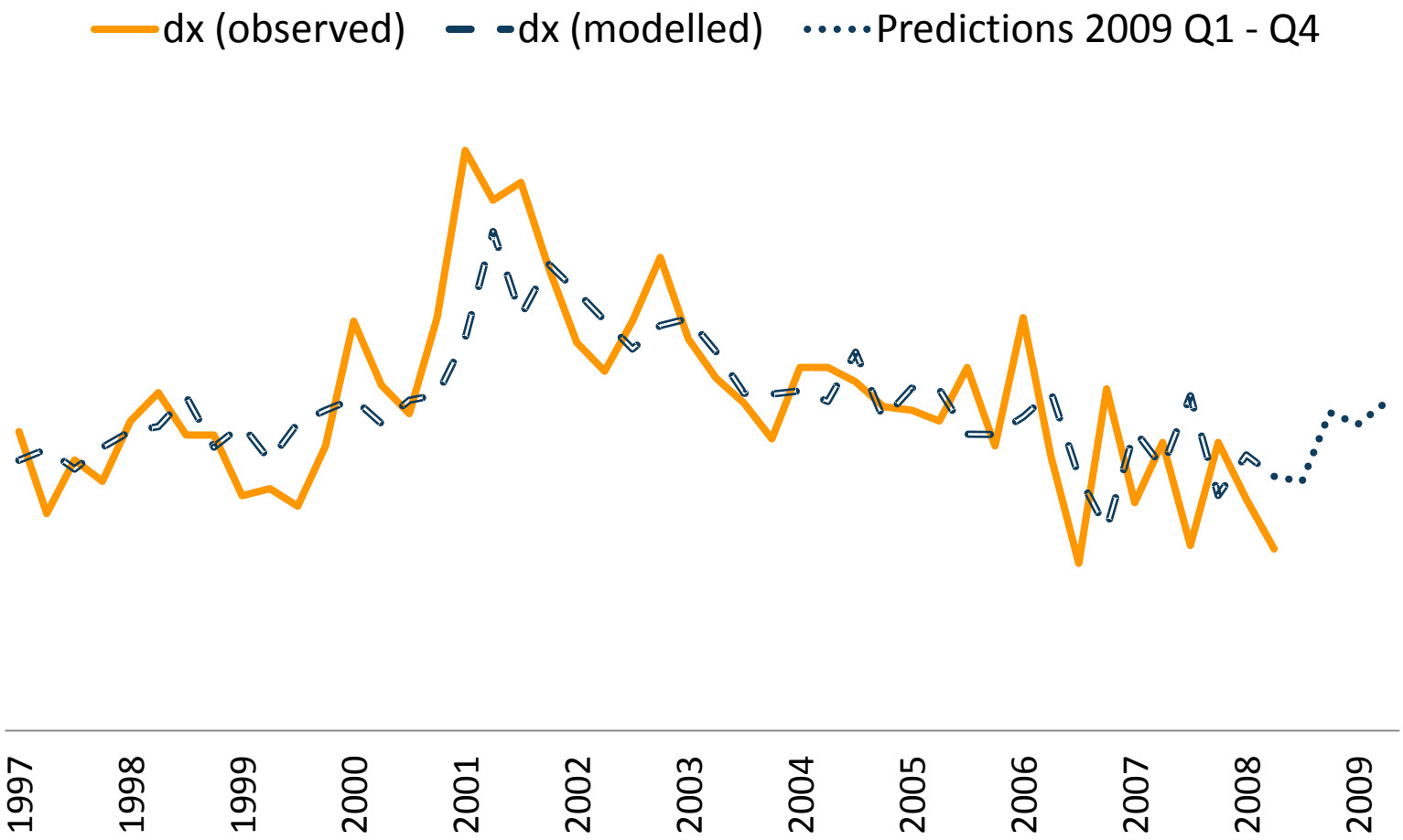
Disability claims study in South Africa

- Benefit trigger:
  Totally and permanently unable to perform your own occupation or any alternative occupation for which you are or could be reasonably expected to become qualified or suited, taking into account the degree of disability and your knowledge, training, education, ability, experience and age.
  - pure "own occupation" definition became most popular in recent years, "any occupation" definition exists as well
- Benefit: Lump sum payment
- Claims experience: 1997 Q3 to 2008 Q4
- Economic indicators: Unemployment (U)/ Consumer Confidence Index (CCI)/ Business Confidence Index (BCI) / Gross Domestic Product (GDP)
- Strongest individual (uni-variate) correlation was found between:
  - Incidence and Unemployment
  - Incidence and Consumer Confidence Index

Source: The Link Between Disability Experience and Economic Conditions in South Africa by KA Schriek and PL Lewis
http://www.ica2010.com/docs/02_final_paper_Schriek,_Lewis.pdf

The South African multi-variate model describes an Anti-Cyclical correlation

$$dx_t = c_0 + c_1 U_{t-1} + c_2 CCI_{t-4} + c_3 BCI_{t-2} + r_t$$



South African model projected an increase in disability incidence rates

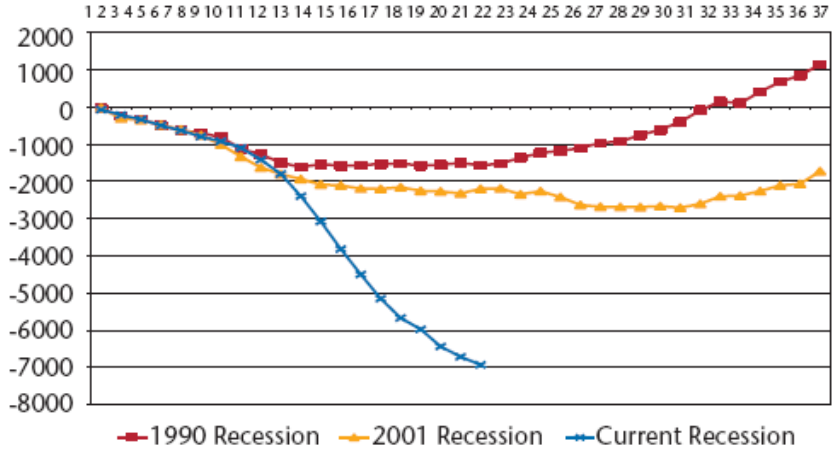
	Observed rate	Modelled rate	
2002	1.24	1.22	
2003	1.14	1.11	
2004	0.95	0.94	
2005	0.92	0.97	
2006	0.94	0.87	
2007	0.72	0.72	
2008	0.62	0.77	+7%
2009	?	0.84	+11%

But observed rates have declined in 2008

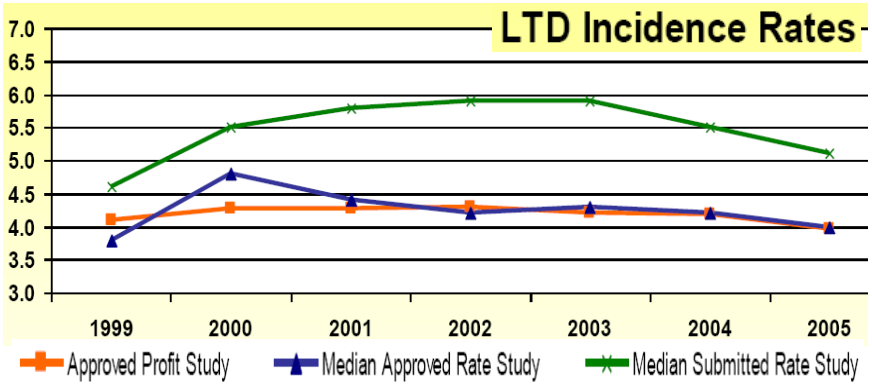
- IBNR?
- First sign that expected effect not occurring?
- South Africa experienced an economic recession in 2008/2009 for the first time in 15 years: model adequate?

USA

Job losses since Recession Begin



1999-2001 Recession



- Based on historical experience an increase in disability claims was expected
- JHA, LTD Mid-2009 Survey
  - Premium reduction in both, in-force business as well as new business
  - BUT: Incidence and terminations /reactivations remained stable!
- Hypothesis: Impact of the recent financial crisis was less severe because
  - High debt ratio and no savings to lean on -> employees can not afford to live from disability benefits (~60% of salary)
  - Sudden layoffs -> no time to claim for disability benefits ("actively at work condition")

Conclusions

- Even if intuition suggests “evident” links, we have to analyse very carefully if there is a statistically proven link between a biometric risk and an economic indicator
- Models need to be interpreted with care:
    - Don’t be seduced by a model’s aura of precision
    - Know your models’ limitations
    - Test assumptions to sensitivity / do stress-testing

It is better to be roughly right than precisely wrong.
John Maynard Keynes

All models are wrong, but some are useful . **George E.P. Box**

Conclusions

"Back-tested" models of many kinds are susceptible to this sort of error. Nevertheless, they are frequently touted in financial markets as guides to future action. (If merely looking up past financial data would tell you what the future holds, the Forbes 400 would consist of librarians.) Indeed, the stupefying losses in mortgage-related securities came in large part because of flawed, history-based models used by salesmen, rating agencies and investors.

Letter to Shareholders, 27 February 2009

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The German disability insurance world

Social security

- 100% (50%) of benefits are paid if the insured is unable to work less than 3 (more than 3 but less than 6) hours a day in any form of gainful employment (for those born before 1961: 'former occupation')
- 100% is also paid if the insured could work up to 6 hours per day but is unemployed or earns less than 1/3 of previous earnings

§ 172 (2) VVG

- *"Berufsunfähigkeit":* Someone is disabled who, as a result of illness, bodily injury or a greater loss of strength than is appropriate for their age, is, totally or partially, and most likely permanently, unable to perform the tasks which they performed without any health impairments in their most recent occupation.

'BU'-Benefit trigger definition

- An insured person is deemed disabled if, due to a medically documented illness, injury or loss of strength, he has lost **at least** 50% of the ability to exercise **his occupation** for an anticipated period **of at least six months** and does not exercise any other occupation commensurate with his previous social position.

Self-employed

- Notwithstanding the above, a self-employed person is deemed disabled as above if the loss of ability to exercise his occupation continues **after a reasonable re-organisation of his business**.

“Berufsunfähigkeitsversicherung” = Occupational Disability Insurance

Benefit trigger
- Partial disability: 100% benefit for 50% disability
- Duration: foreseeable future
- Own occupation (used to be own or suited)

Medical component
- Work performance can no longer be offered
- Or only
  - within a different time frame
  - parts of the previous tasks can be performed

Economical component
- Protection of the achieved social standing through income protection

Premium
- Mostly level premium
- Reviewable subject to trustee’s approval / virtually guaranteed
- Immediate rebate (20%-40%) through profit sharing

Typically 4 occ. classes
- Up to 10 classes

Forms
- Mostly rider with WoP and regular benefit
- Stand-alone increasingly popular

Mostly individual life
- Up to normal retirement age
- Indexation
- Financial underwriting at inception

Fierce competition in established segments on

- **Terms and conditions**
  - Regular updates to meet the requirements of rating agencies and stay amongst the TOP 5 or 10

- **Price** is now dominating the market
  - Premium reductions for certain occupational classes by increasing the profit sharing.
  - Rearrangement of occupational classes, i.e. shifting some targeted occupations into a better class.
  - Complete refinements of the occupational class system and introduction of more occupational classes.

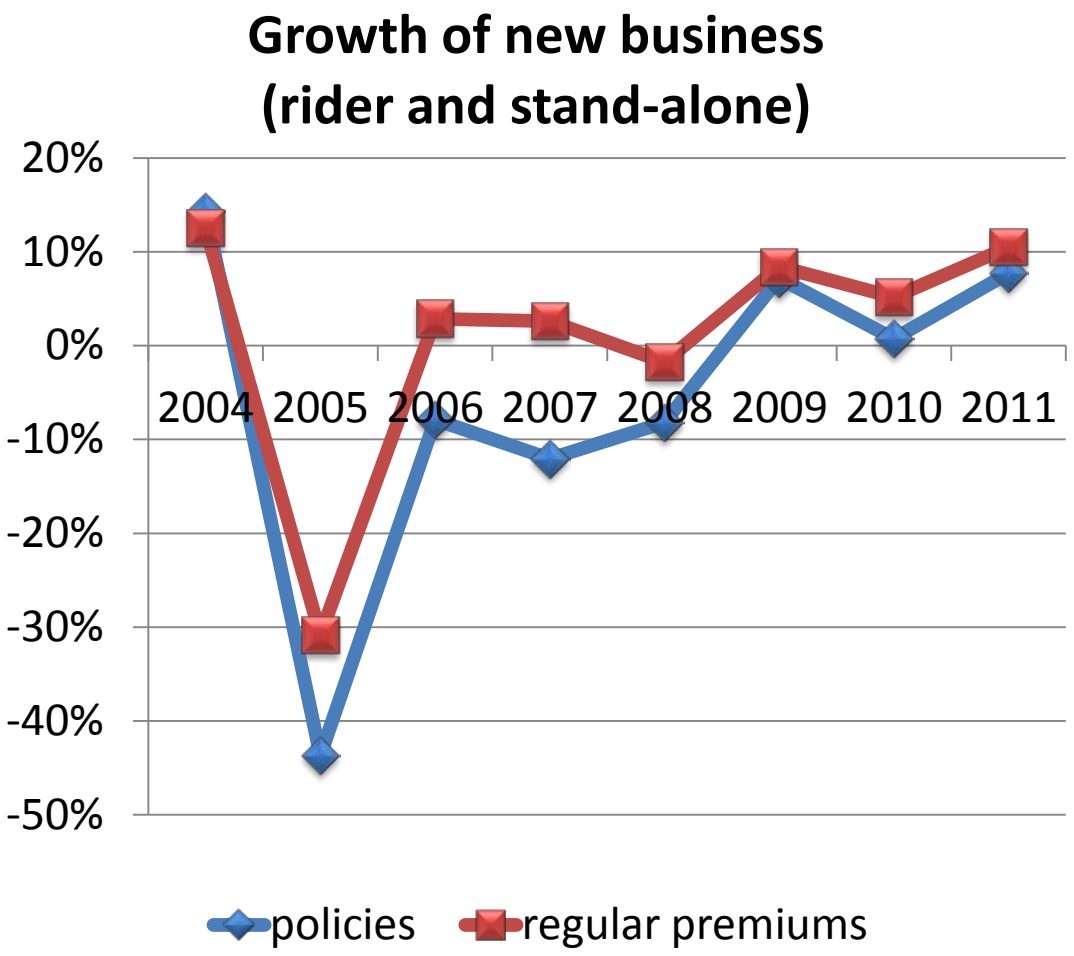
The German disability market has grown dynamically recently

New business 2011:

- *1.11 million policies*
- *€ 827 million premium*

In-force business 2010:

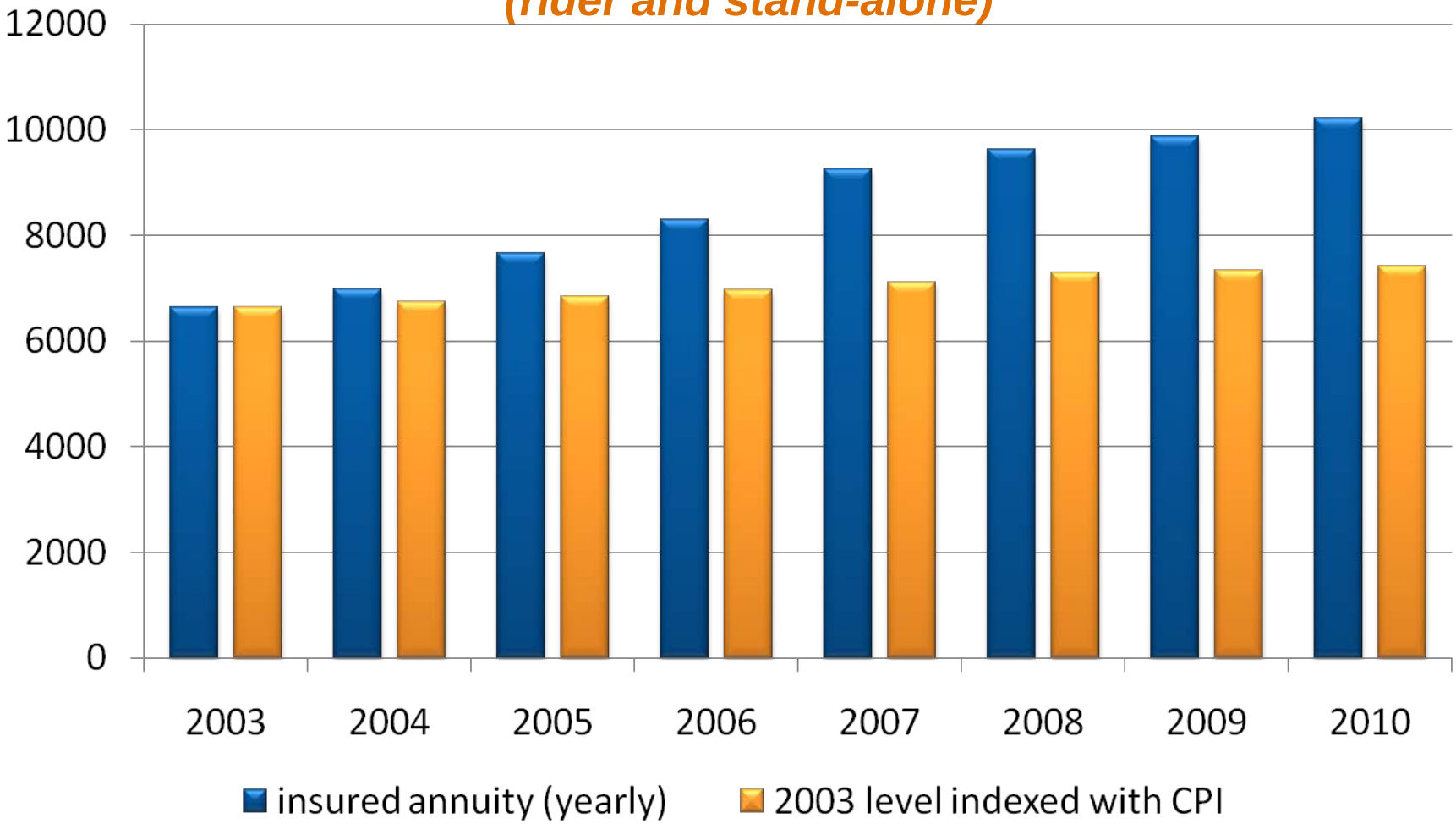
- *16.64 million policies*
- *€ 6.76 billion premium*



Source: GDV, Gen Re calculations

Insured disability annuity amounts increase steadily

Average insured annuity (yearly) new BU business (rider and stand-alone)



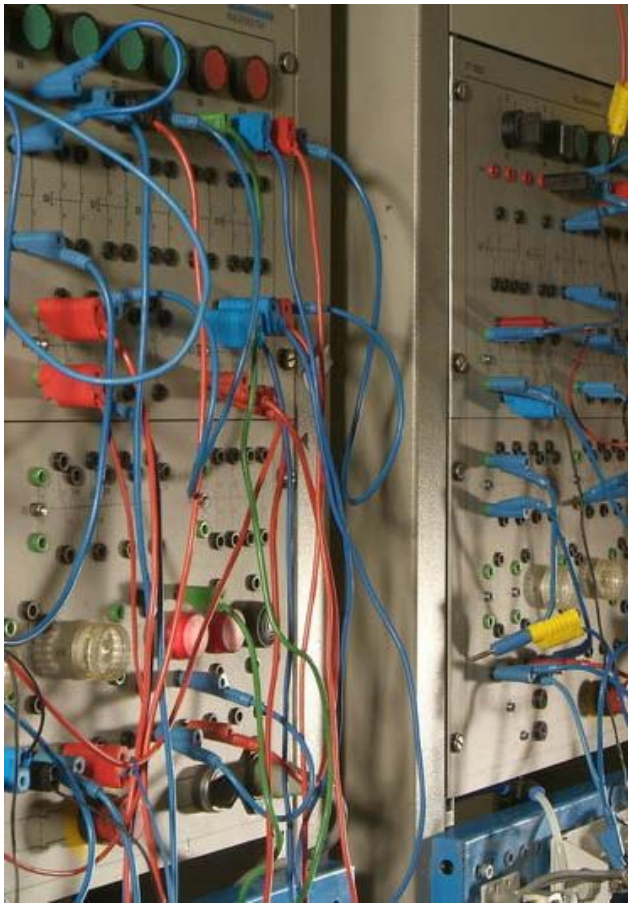
Source: GDV, Gen Re calculations

most expensive = 14 x cheapest premium to be found in the market

Profession	Lawyer	Bricklayer
Sources: Morgen & Morgen LV-WIN / Federal Statistical Office, Verdienststrukturerhebung 2006		
yearly premium for a monthly disability benefit of 1.000 € x=n=t=30	Cheapest offer: 202 €	Most expensive offer: 2,756 €
average yearly pre-tax income (males, full-time employees, 2006)	86,000 €	30,000 €

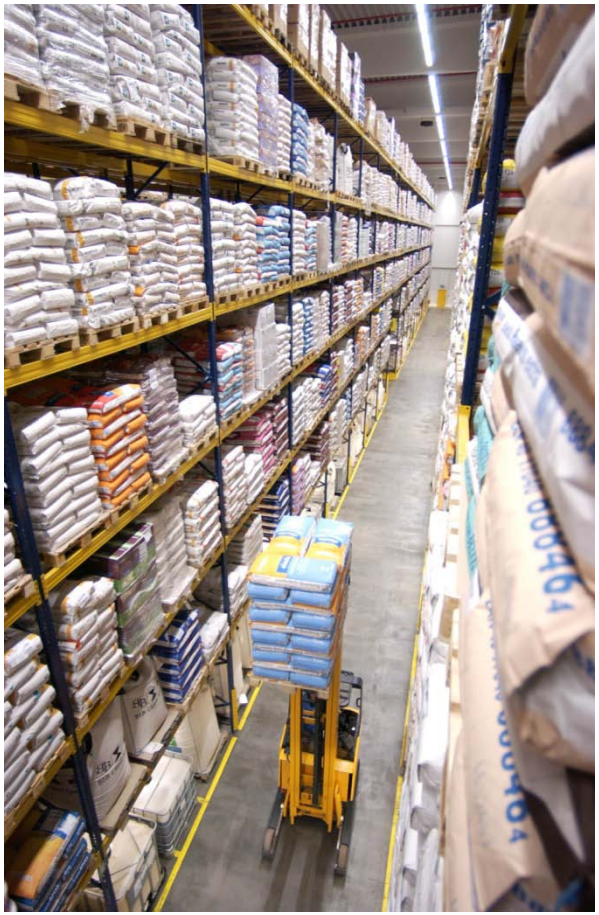
There is a wide range among companies in assessing occupational risks

electrical engineer



229 - 529 €

warehouse clerk



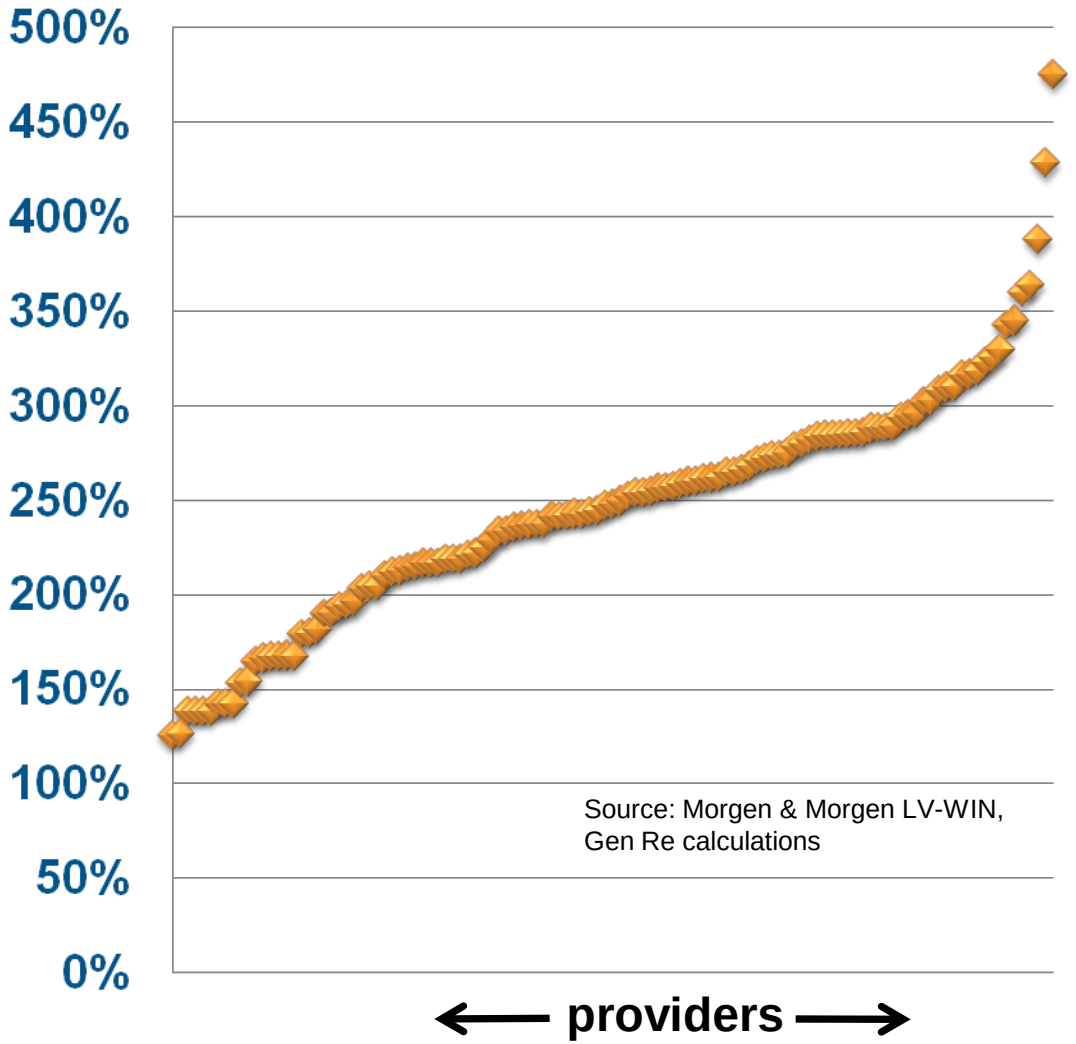
235 – 1,631 €

Source: Morgen & Morgen LV-WIN

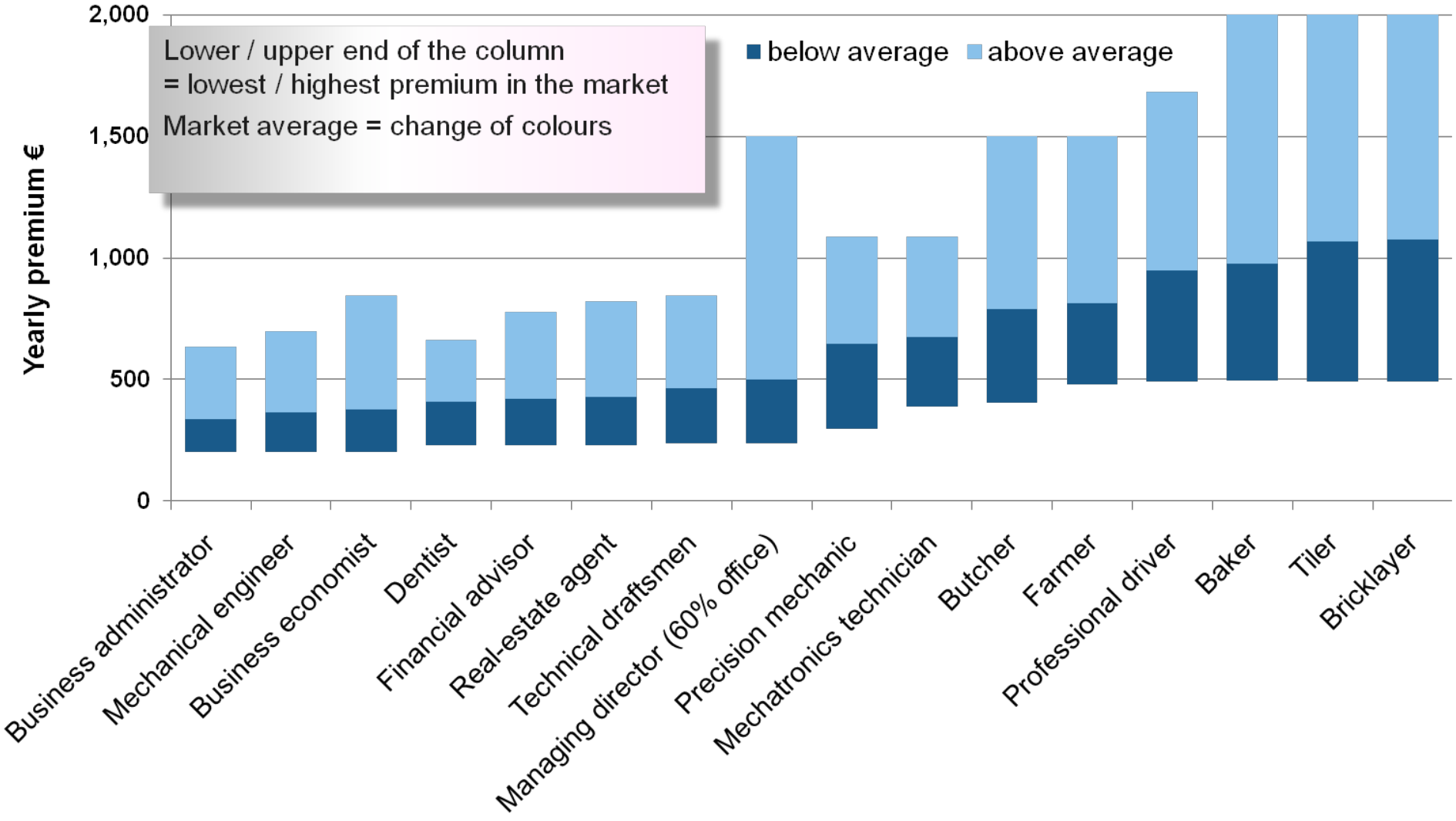
Premium differentiation between providers is very heterogeneous

Mechanic / technician

lawyer



Premiums differ significantly for many occupations



Source: Morgen & Morgen, male, 30-30, € 12,000 yearly annuity

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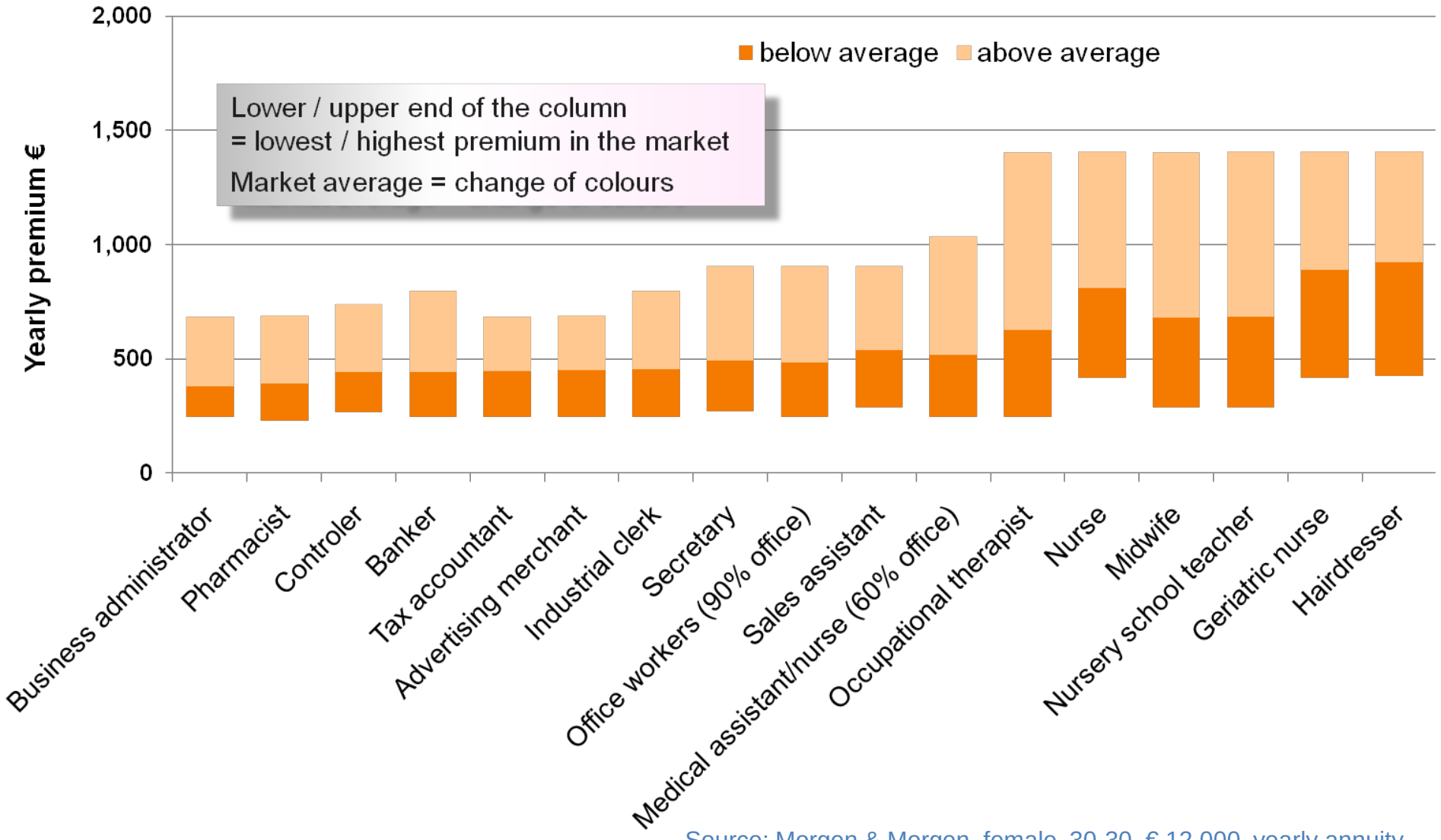
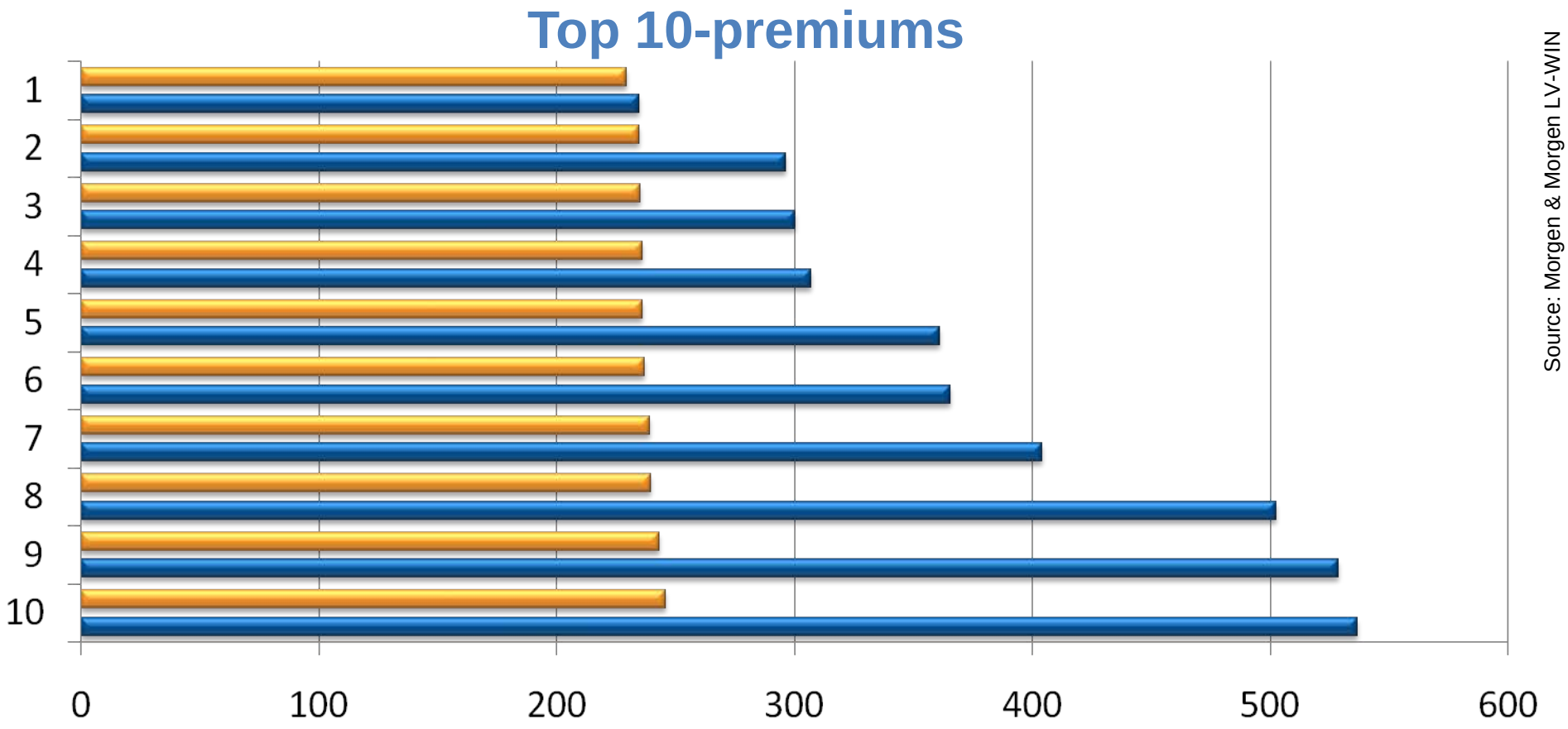


Source: Morgen & Morgen, female, 30-30, € 12,000 yearly annuity

Intensity of competition varies by occupation

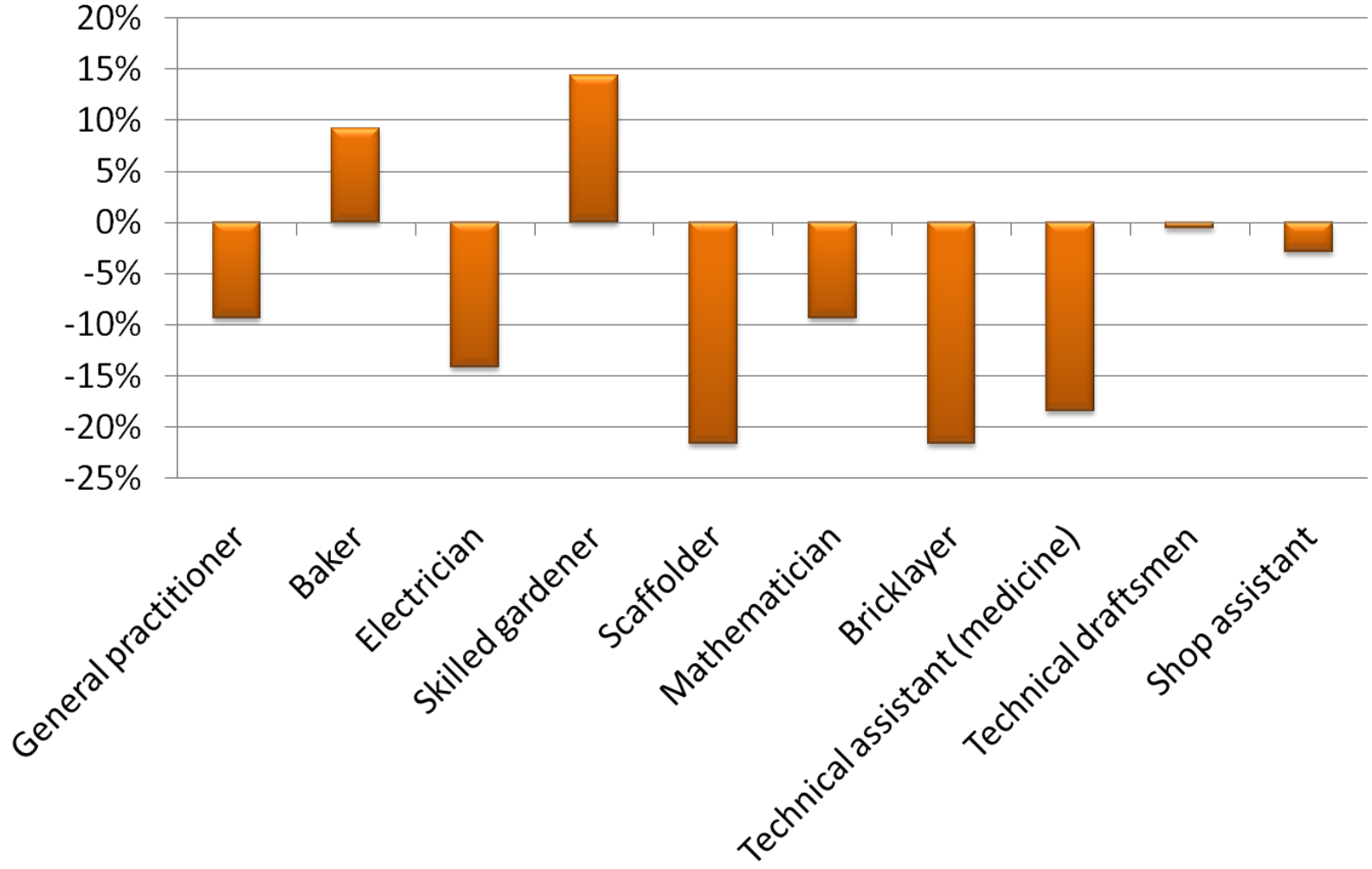


Source: Morgen & Morgen LV-WIN

Provider	1	2	3	4	5	6	7	8	9	10
Tax consultant	229	235	235	236	236	237	239	239	243	246
Warehouse clerk	235	296	300	307	361	366	404	502	529	537

Premium decline is evident …

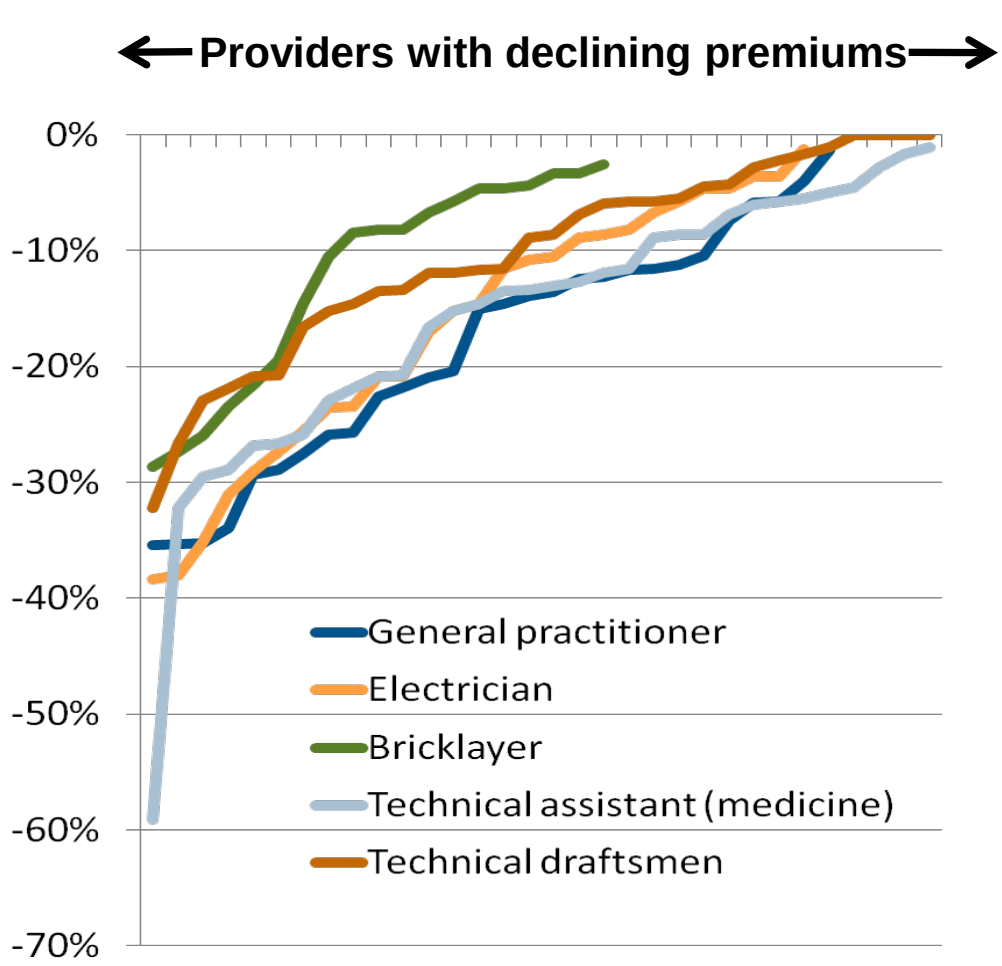
Change in lowest gross premium from August 2007 to March 2011

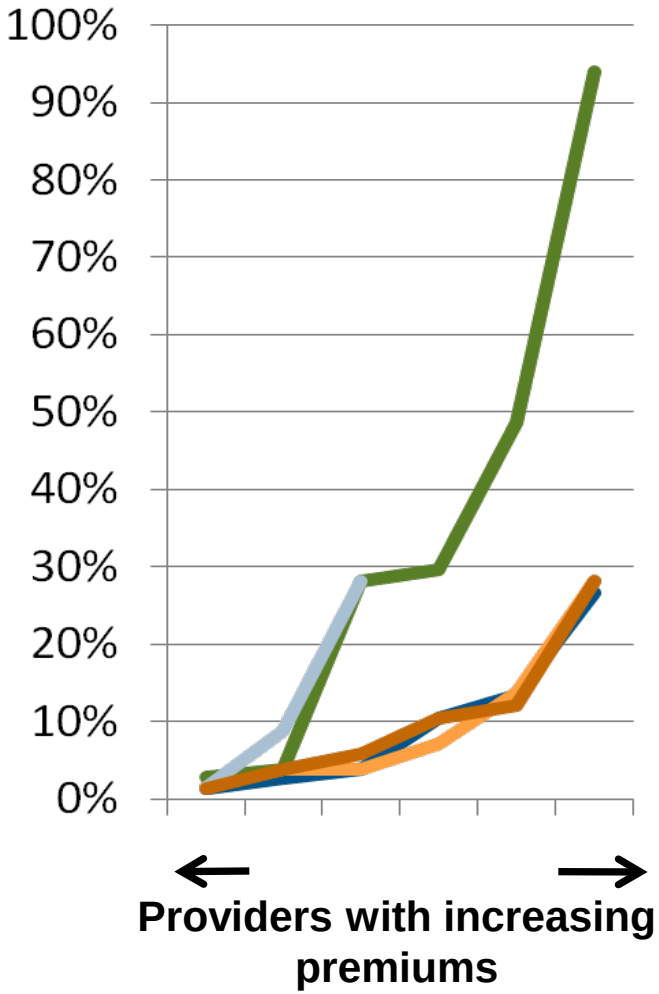


Source: Morgen & Morgen LV-WIN, Gen Re calculations

Premium changes of selected providers: Heading downwards!

(from August 07 to March 11)





Source: Morgen & Morgen LV-WIN, Gen Re calculations

Strong competitive pressure in the German disability market

>Drastic
premium reductions

- **Reclassification**
  of occupations into more favourable occupational classes
- **Reduction**
  in the (net) premium level, i.e. after profit sharing
- **Increase**
  in the number of occupational classes

Conclusion – market & market positioning

- German private disability market is growing and the degree of coverage is increasing.
- The price structure in the market is extremely heterogeneous.
- Trend towards a more detailed and sophisticated risk differentiation.
- Significant premium decline, especially for less risky occupations.

Gen Re's experience - step by step to a new tariff …

I. Statistical analysis of data
- Raw incidence experience for many occupations available

II. Know-how on occupations
- plausibility checks, verifying and amending statistical results may be necessary
  - for occupations for which data base is small
  - for influence of new legislation on claims not (yet) reflected in the experience

III. Definition of occupational risk classes

IV. Definition of additional criteria

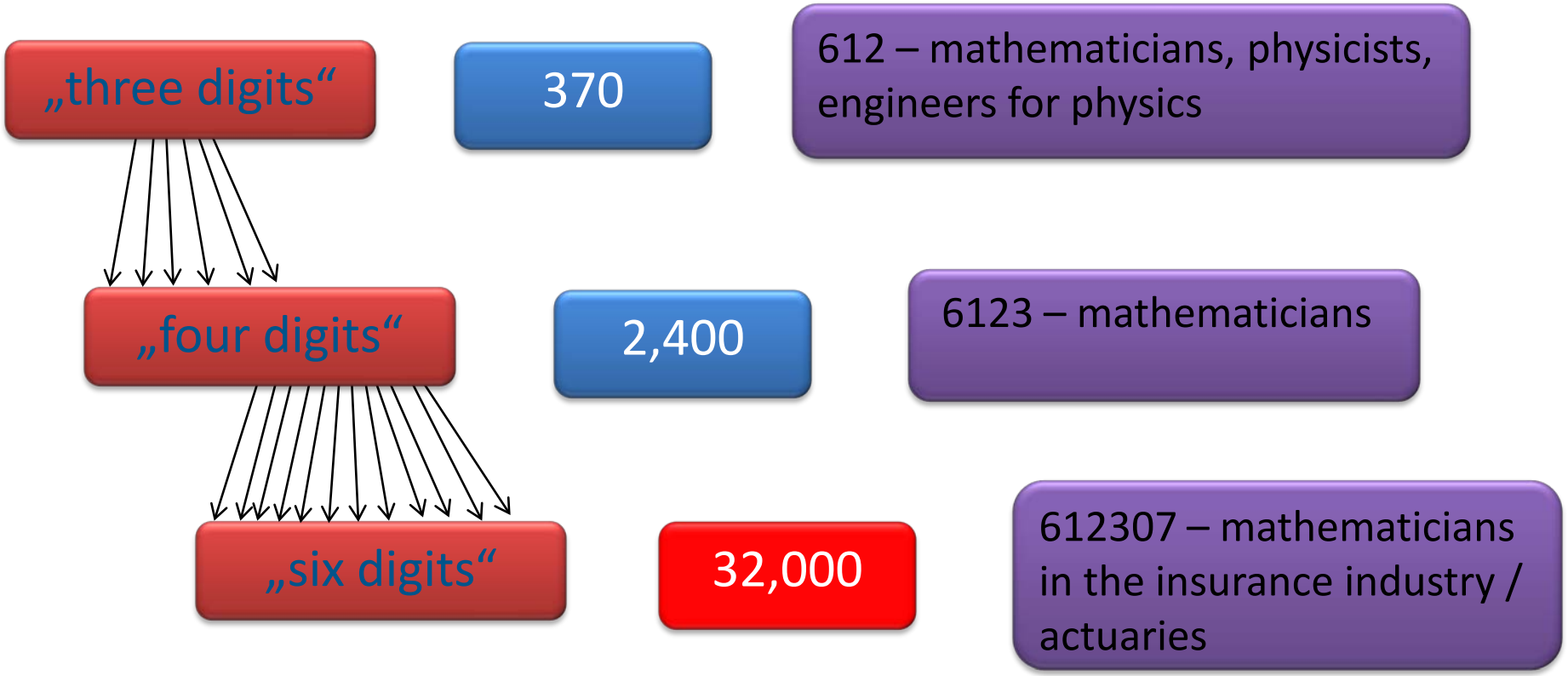
V. Best estimate for the risk classes / criteria

VI. Company specific adjustment

(e.g. for target group, claims experience, sales channel, underwriting approach, …)

I. German coding of occupations

Hierarchical numerical code with several layers (Federal Statistical Office)



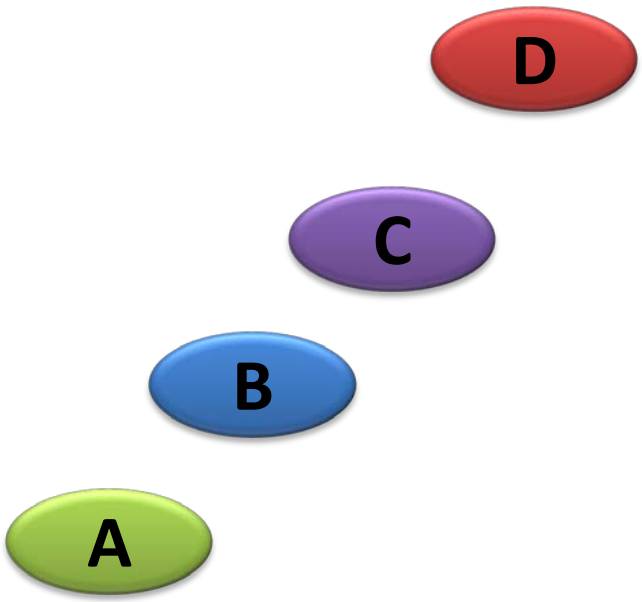
Around 6,500 six-digit codes cover 99% of the exposure!

II. Supplementation by means of occupational analysis

- Starting point:
  analysis of claims experience at 3-/4- and 6-digit level
- Raw figures alone can not provide a full risk assessment
  - Updated occupational information and latest knowledge about occupational stress/requirements and dangers
  - Particularly in the case of 'new' occupations for which insufficient statistically relevant information is not yet available

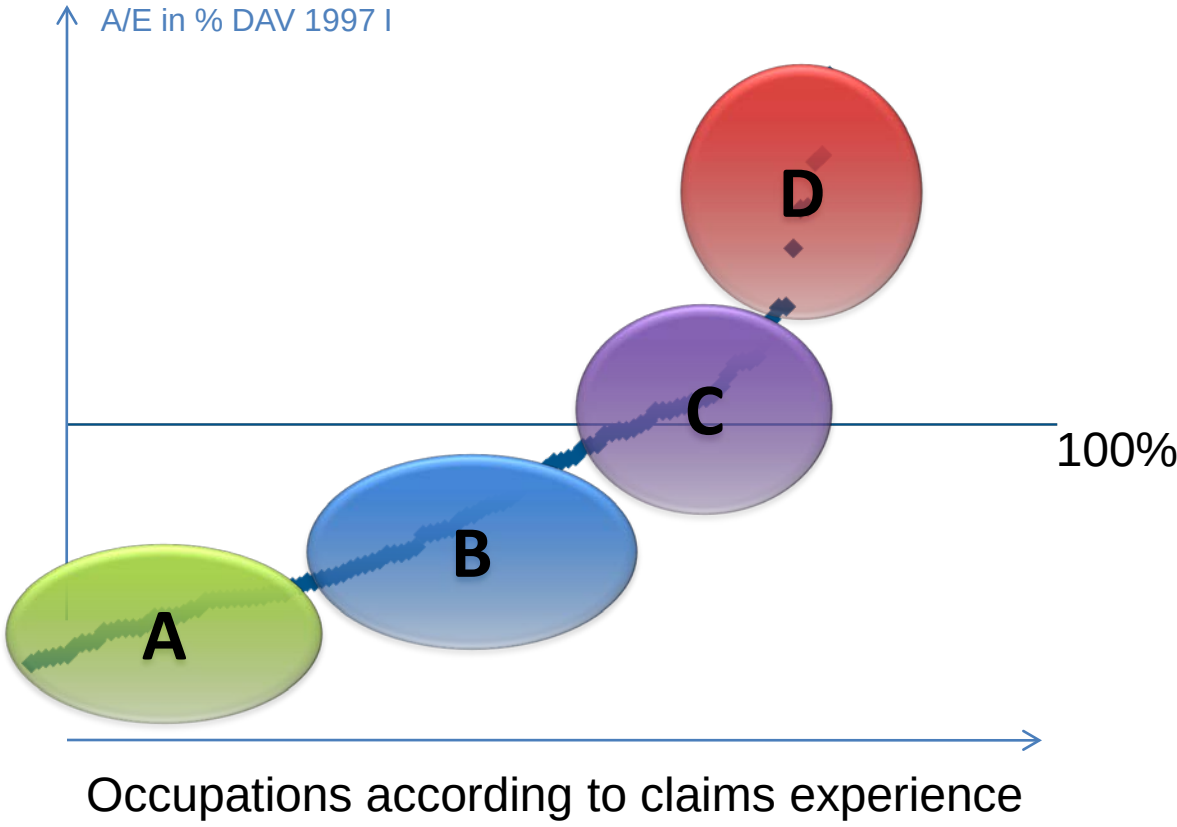
III. There are no “natural“ occupational classes …

The idea of „clusters“ of occupations …



… is not confirmed by actual claims experience.

Expected distribution



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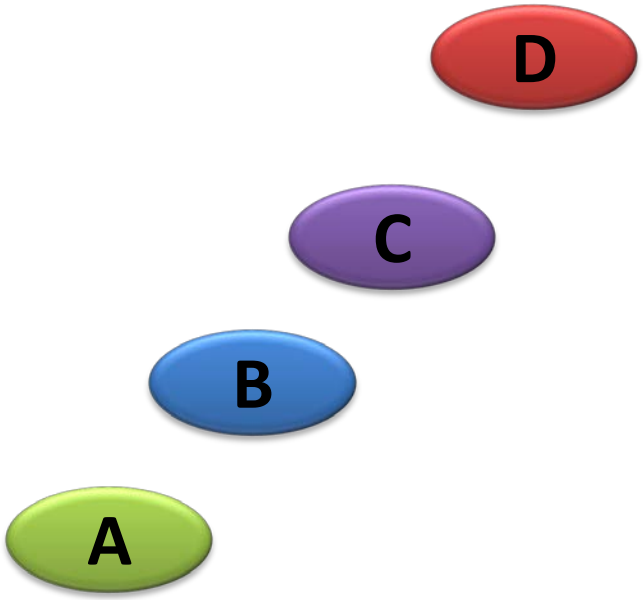
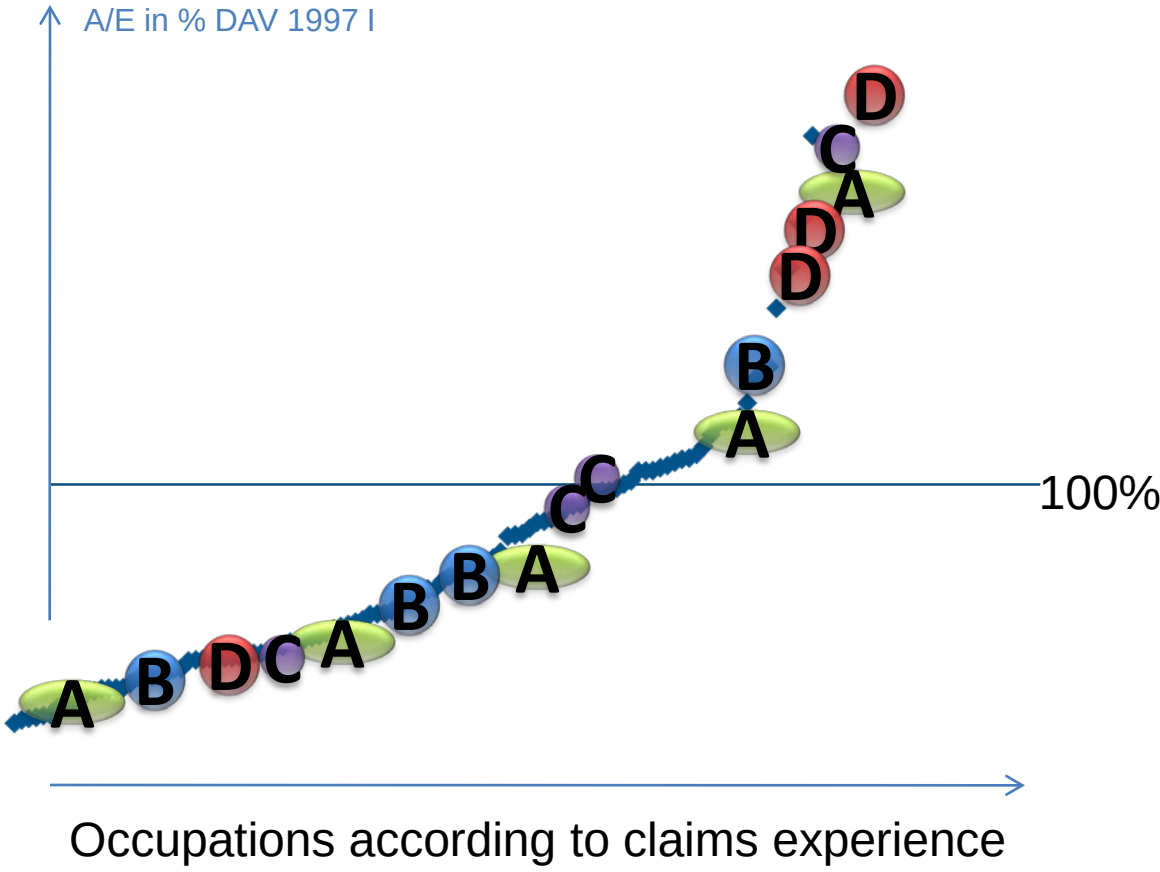


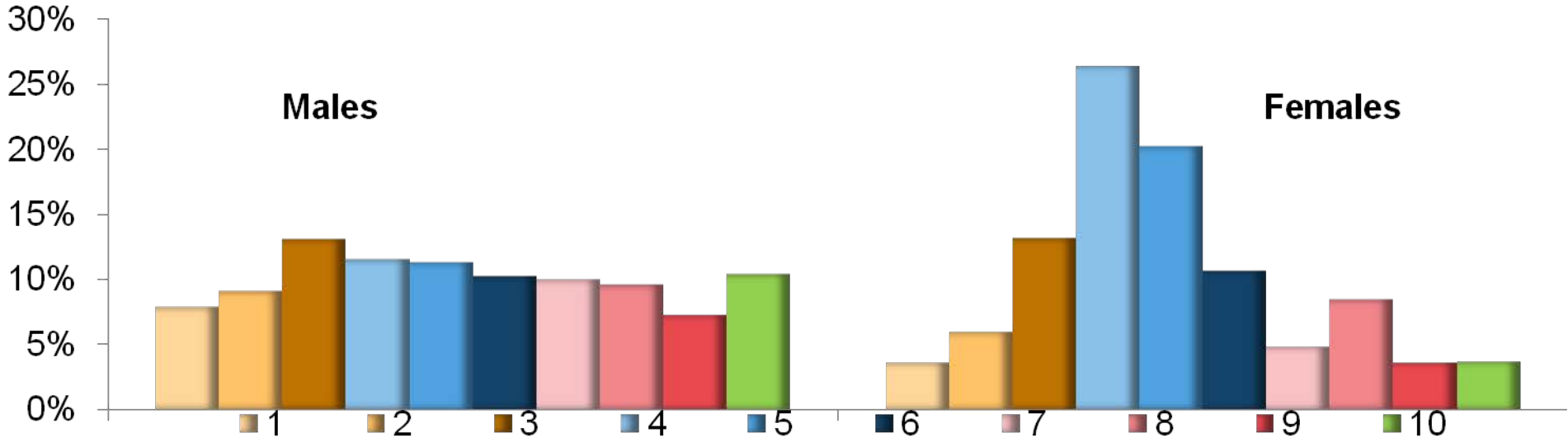
… is not confirmed by actual claims experience.

… but dramatic differences in actual claims experience



III. 10 risk classes can represent the whole range of occupational risks

- 10 risk classes are adequate for a differentiated portfolio assessment – more classes do not result in more accuracy
- Requirements for the risk classes:
  - Observed claims levels should increase monotonously with the risk classes
  - Each class should have a reasonable exposure level
  - Deviations within a risk class should, on an exposure-weighted basis, be as small as possible



III. Examples of occupations in the 10 risk classes

Risk class	Examples of occupations
1	Industrial engineer, computer scientist
2	Bank clerk, doctor
3	Dentist, construction engineer
4	Clerk, teacher, electrical engineer
5	Dental technician, retail salesman
6	Electrician, chef
7	Motor mechanic, farmer
8	Fitter, carpenter, physiotherapist
9	Driver, Assembler, painter
10	Bricklayer, roofer, construction worker, baker

III. The 10 new risk classes permit a differentiated view

- A, B, C, D:
  Gen Re's previous occupational classes
- The following matrix shows how the previous classes are distributed among the risk classes (men only)

	1	2	3	4	5	6	7	8	9	10	Sum
A	25%	25%	29%	11%	4%	2%	3%	0%	0%	0%	100%
B	0%	3%	10%	22%	25%	14%	12%	5%	0%	9%	100%
C	0%	0%	0%	1%	4%	16%	15%	26%	24%	15%	100%
D	0%	0%	0%	0%	0%	0%	11%	4%	3%	82%	100%

IV. Benchmarks for the risk assessment of an occupation

- Occupational disability results from the demands, burdens, dangers … which are linked to the specific occupation
- Relevant factors
  - Repetitive, monotonous shift work
  - Frequent and perpetual standing, lifting, carrying
  - Working at low temperature, humid environments, ….
  - Occupation is not self-determined to large extent
  - Accidents, travelling
  - Stress, time pressure (psychological demands)

IV. Additional risk-relevant factors

- Job title / occupation is the leading criterion
- Risk of disability depends on what the insured is actually doing
- There are some other risk-relevant factors to assess status and duties

Characteristic	Values
Occupational status	Employee / self-employed / civil servant/ student / pupil / unemployed/ intern / other
Personnel responsibility/ management function	Executive / personnel responsibility for n persons
Highest training qualification	University degree / recognized vocational training qualification / qualified specialist employment (foreman)
Proportion of physical tasks / office tasks	In percent, actual enquiries, e.g. physical tasks < 25%, office tasks > 75%
Nature of the employment relationship	Full-time permanent employment

Consequences of occupational differentiation in a larger number of classes

- More risk adequate premiums
- More attractive offer for occupations with a lower risk
  BUT – premiums for higher occupational risks increase!
- Risk of anti-selection for providers who do not further differentiate
- Alternative / affordable cover for higher occupational classes needed!
  - Any occupation ? / Carve out cover ? / Essential Ability ?
  - Best advice?
  - Attractive for sales forces (lower premiums – lower commission) ?

Overview

Recent trends in the German private disability insurance market

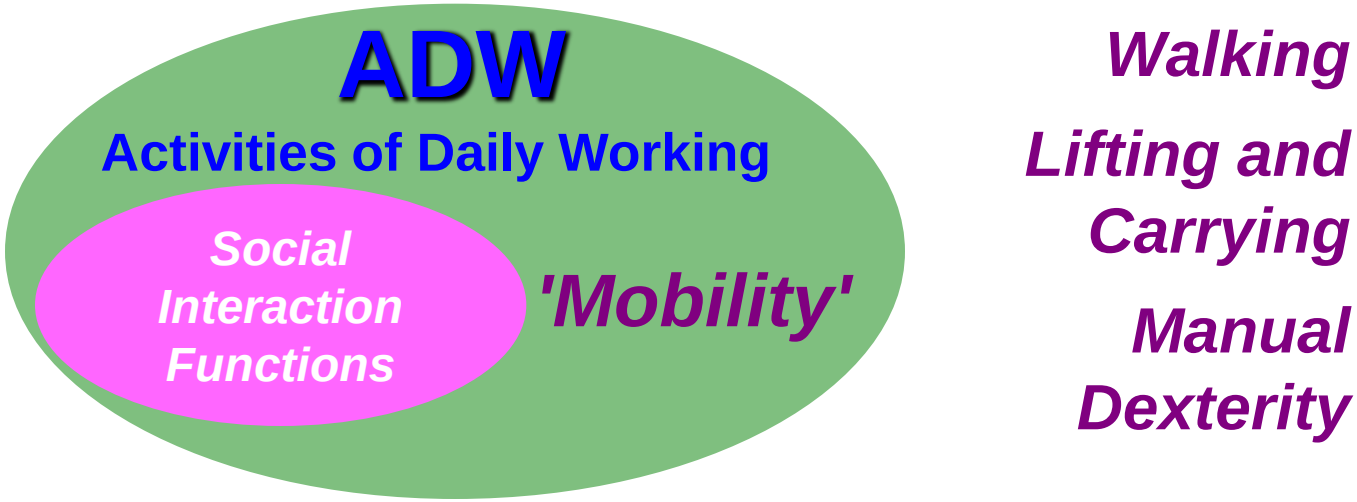
Disability and the economy

Alternative product concepts for disability coverage

Reasons for the interest in alternative disability cover

- Expensive (for some occupational classes)
  - offer cheaper worst case cover ("budget-disability cover") instead of expensive comprehensive disability cover
- Share of claims due to mental illness on the rise
  - carve out cover *excluding* certain (frequent) causes of disability (mental/nervous disorders, back problems)
- Complex claims management (in case of mental health etc.)
  - design a more transparent benefit trigger that leads to more objective and measurable claims decisions
- Break the direct link to the occupation of the insured

Essential abilities (catastrophic disability)



- Fail
  - 1 Physical Impairment (PI) OR
  - 3 Activities of Daily Work (ADW)
- PI: vision, speech, orientation, use of hands
- ADW: hearing, standing, climbing stairs, walking, kneeling, getting on and off a chair, grip (bottle opening), moving arms, lifting and carrying, loss of driver's licence due to illness
- **“Cheaper” (especially for manual and high risk occupations)**

Another obvious idea: Carve-out

Fair?
Emphasis on what is not covered.

Problem of co-morbidity and anti-selection.
Difficult to quantify!

Why don't we exclude *xy* as cause of disability and reduce the premium accordingly ?

Excluding certain disorders as cause of disability does NOT necessarily imply a proportional reduction in price!

Carve-out plans

define what is covered and NOT what is not covered

Affordable

Low cost

Recommendation: Positive List

define what is covered and NOT what is not covered

*Accident **is clearly defined**.*

Disability due to accident

+

Disabling Dread Disease

→

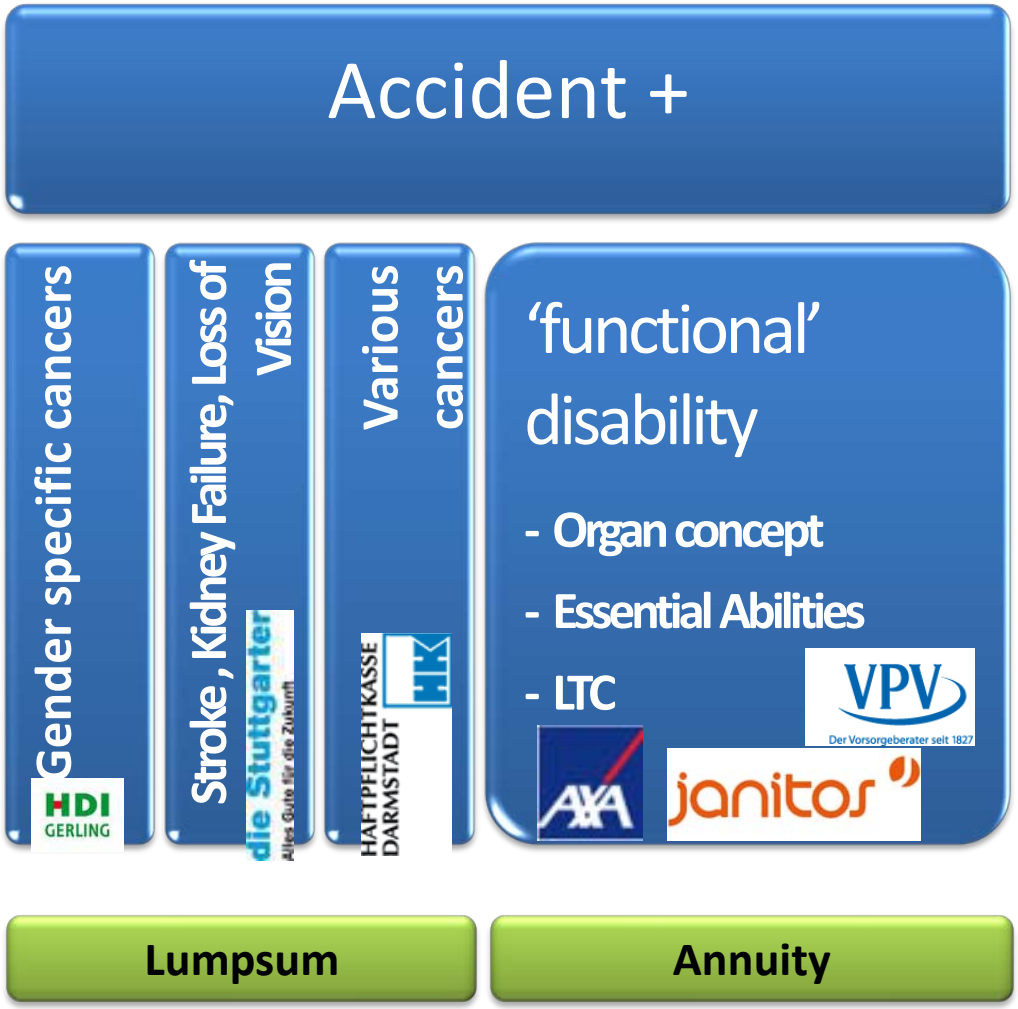
Benefit

*Only claimants suffering a DD, who **meet the covered degree of disability after the DD** qualify for the benefit!*

- *Heart attack*
- *Stroke*
- *Kidney failure*
- *Cancer*
- *Multiple Sclerosis*

*Modification with **Essential Ability components** possible to cover also severe musculoskeletal disabilities.*

Another current trend in Germany – Enhanced Accident Cover



Some characteristics:

- Life-long annuity or up to normal retirement age
- Benefit indexation (optional)
- Defined benefit duration of e.g. 5 years for cancer
- WoP for 6 month in case of unemployment
- Option to enhance coverage to occupational disability

Final Remarks

- Private disability market is under-developed in most European markets but increasingly important in others (e.g. Germany, Netherlands, UK)
- Reforms of generous social security systems offer opportunities
- Opportunity comes with “social” responsibility (pressure on definition, risk selection, claims handling and pricing of less popular risks)
- Carve-out products are not considered the solution
- Comprehensive plans are needed also in future
- Alternative disability plans good for a niche (but when is it best advice?)

Disclaimer