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Critical Illness Insurances: Challenges and Opportunities for Insurers

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ABSTRACT

Since the first introduction of critical illness insurance in 1983 in South Africa, the product has successfully spread to other insurance markets, especially in Asian and Anglophone countries, but market penetration remains low in other countries. For this reason and because of the increasing relevance of dread diseases, the aim of this paper is to provide a first comprehensive overview of challenges and opportunities associated with critical illness products for insurers. Toward this end, we first present the various product designs, as well as the developments that have taken place within the market before comparing this form of coverage to alternative insurance products in order to better assess the market potential. Based on these assessments, we thoroughly discuss the major challenges and opportunities within the market from the insurer's perspective.

Keywords: Critical illness insurance, dread disease market, health insurance, product design

JEL classification: G22

1. INTRODUCTION

Critical illness insurances (also referred to as "dread disease" or "trauma (recovery)" insurance) pay a lump sum upon diagnosis of a severe and/or critical condition that may not necessarily be life-threatening. This type of insurance was first introduced in 1983 in South Africa. Along with the pioneering cancer policies of the US, Israel and Japan (see Dash and Grimshaw, 1993), this product aimed to fill a gap in the coverage of health and disability insurance policies (see Munich Re, 2001). In addition, even though savings products in the life and pension context remain highly relevant, insurers are simultaneously and increasingly concentrating on product innovations with a focus on biometric risk as part of their core business, e.g., critical illness insurance. While these products exhibit a considerable market share in Asian insurance markets and are also offered in various other markets, especially in

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the UK and Japan (mostly cancer insurance) (see General Re, 2007; PartnerRe, 2009), several developments and issues, e.g., the progress in medical science, combinations of policies into one product and the definition of critical conditions, provide major challenges and chances for insurers.

In the literature, most information about the products and the markets are spread over several industry reports (see, e.g., General Re, 2007; PartnerRe, 2009; Munich Re, 2001), while the academic literature has to date mainly focused on actuarial models (see, e.g., Allerdissen, Drude, and Gebhardt, 1993; Haberman and Pitacco, 1999; Lörper, Lüttgen, and Trunk, 1991) and underwriting (see, e.g., MacDonald, Waters, and Wekwete, 2005a, 2005b), or on the more general area of health insurance, thereby also addressing critical illnesses (see, e.g., Christiansen, 2012).

In this paper, we study the critical challenges and opportunities for insurers, as well as the different designs of critical illness insurance in detail and from a practical and theoretical point of view compared to other insurance policies. Toward this end, we first present the various product designs in a compact manner, along with a brief overview of the product's global market development. Following on, we conduct a comparative assessment of critical illness insurance compared to other existing policies in order to identify the role of critical illness insurance as an extension or substitute and to highlight the product's advantages and disadvantages. Finally, we provide a thorough discussion concerning the major challenges and opportunities for insurers when offering these products, including demand factors and marketing issues. Finally, we provide a summary of the research results.

2. Critical Illness Insurance: Contract Design and Market Development

2.1 Coverage

The first critical illness insurance (CII), also referred to as “dread disease”[1] insurance, was introduced in South Africa in 1983 by Crusader Life (see, e.g., General Re, 2007) and covered the four most common critical illnesses: cancer, heart attack, stroke and coronary artery bypass surgery (see, e.g., Dash and Grimshaw, 1993). Although surgical procedures do not technically represent a disease, these four cases have been classified as the “basic four” dread diseases (see Baars and Bland, 1993).

[1] The first product name, “dread disease”, was changed to “critical illness” for marketing reasons; in Australia, the more common term was “trauma (recovery) insurance” (see Krause, 1998a; Munich Re, 2001).

In the event of a severe and typically life-threatening disease such as those consisting of the basic four, (traditional) critical illness insurance provides a single lump sum payment to the insured (see, e.g., Munich Re, 2001).[2] This lump sum is classified as a "living benefit", as it is paid out after diagnosis and upon the patient surviving a specified serious disease; therefore, critical illness insurance is not designed to compensate for *specific* expenses or for the loss of earnings (see, e.g., Dash and Grimshaw, 1993; Munich Re, 2000). Instead, the benefit is meant to support the policyholder in times of financial distress and the use of the benefit is entirely flexible. For instance, the payment allows for the compensation of expenses that are related to the disease, such as medical costs (see, e.g., Allerdissen, Drude, and Gebhardt, 1993). This is relevant because the use of the latest medical technology is rarely covered by health insurance (see Longo and Grignon, 2009). As spending of the lump sum is entirely up to the insured, the benefit can also be used for non-medical financial costs, such as mortgages and credits (common in the U.K.) (see, e.g., Graham and Xie, 2007).

CII cover a large variety of critical illnesses and conditions (see Figure 1) following categorization suggested by the Association of British Insurers (ABI), which proposed splitting the potential diseases into *core diseases* (including the basic four) and *additional diseases* (all remaining diseases covered) (see, e.g., ABI, 2005; Lörper, Lüttgen, and Trunk, 1991). In several insurance markets, the type and number of insured diseases were therefore a relevant part of the market competition (see Krause, 1998a). The coverage also varied due to different customer needs, national gaps between private and statutory disability and health insurance (see König et al., 2011), as well as differences concerning relevant local diseases. For instance, in Southeast Asia, the coverage typically includes local diseases such as encephalitis and meningitis (see Munich Re, 2001).

In addition, several risk factors are generally excluded (see Figure 1); benefits are not paid out if the diagnosed and covered critical illness is caused by, among others, participation in criminal acts, hazardous sports, war, civil commotion, gross negligence as well as drug and alcohol misuse (see ABI, 2011; Schattschneider and Wittkamp, 1997). Common exclusions also comprise a failure to follow medical advice and HIV/AIDS (see ABI, 2005); however, an HIV infection may be covered on the condition that the infection was caught in a specified geographical area as a result of medical treatment, physical assault or while performing specified employment (see ABI, 2011). In addition, diseases like Dengue fever may not be

[2] In this paper, the covered conditions may be described as "disease" or "illness", despite the fact that some are not actually illnesses. Moreover, innovations have resulted in products with multiple lump sum payments, which are discussed in more detail in Section 4.

covered, as they contradict the requirement of randomness due to the disease's prevailing connection with lower hygiene standards and the resulting likeliness of occurrence in epidemics (see Baars and Bland, 1993).

Furthermore, to provide protection against critical illnesses that are not otherwise listed, the coverage of CII optionally includes "catch-all" benefits for total and permanent disability (TPD), loss of independent existence and terminal illness, where terminal illnesses are defined as diseases that are likely to result in death in less than a year (see, e.g., Dash and Grimshaw, 1993; Munich Re, 2001).

Figure 1: Overview of (selected) covered conditions and potential exclusions[3]

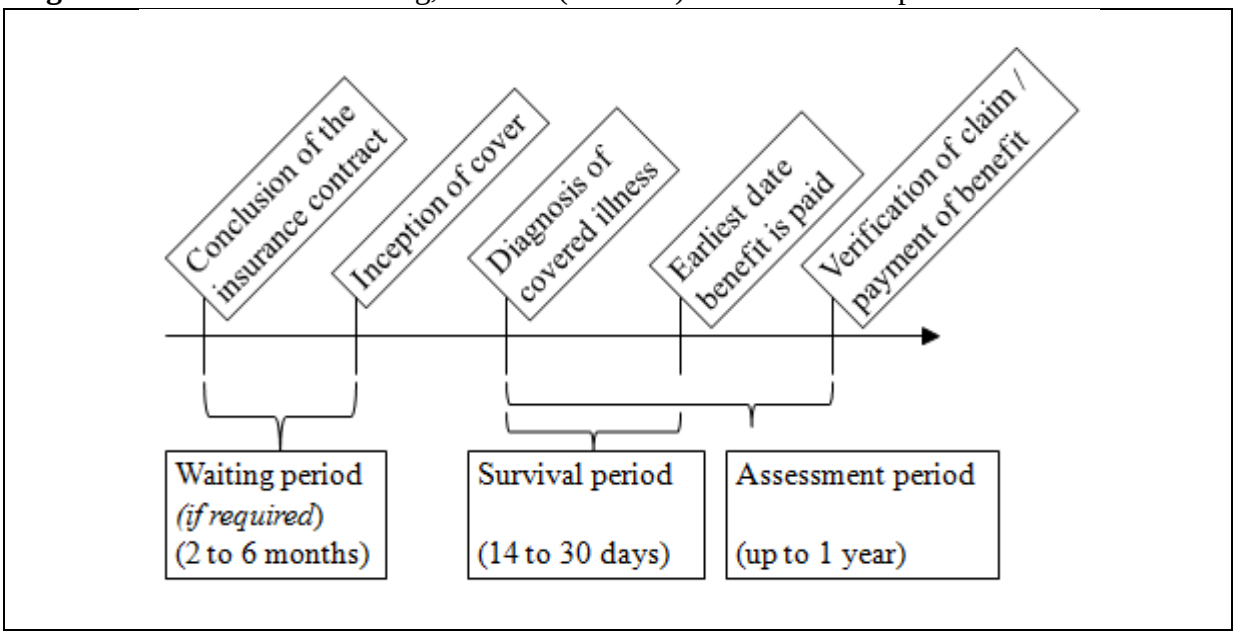
Core diseases		
Cancer	Basic four	
Heart attack		
Stroke		
Coronary artery bypass surgery		
Kidney failure		
Major organ transplant		
Multiple sclerosis		
Additional diseases		
Alzheimer's disease		Loss of speech
Aorta graft surgery		Meningitis
Aplastic anemia		Motor neuron disease
Benign brain tumor		Occupational HIV
Blindness		Paralysis/ paraplegia
Coma		Parkinson's disease
Deafness		Terminal illness
Encephalitis		Third degree burns
Heart valve replacement or repair		Total and permanent disability (TPD)
Loss of independent existence/long-term care		Traumatic head injury
Loss of limbs		
Exclusions		
Alcohol misuse		Gross negligence
Aviation		Hazardous sports
Civil commotion		HIV/AIDS
Criminal acts		Living abroad
Drug abuse		War
Failure to follow medical advice		

[3] See ABI (2005), ABI (2011), Munich Re (2001), Schattschneider and Wittkamp (1997).

2.2 Specifics of the contract structure

After the conclusion of the insurance contract, the cover of the CII is instated following the *waiting period*, which – in case it is required by the insurer[4] – generally lasts for two to six months, depending on the type of disease involved (see Krause, 1998b; Munich Re, 2001). This is intended to reduce the risk of adverse selection (see, e.g., Krause, 1998b). Once a critical illness is diagnosed, the living (lump sum) benefit is not paid at the time of the diagnosis, but at the end of the *survival period*, which begins with the inception of the dread disease (see, e.g., ABI, 2011). Usually, the survival period, which is also known as the *deferred period* (see Munich Re, 2001), ranges from 14 to 30 days and is intended to ensure that a critical illness has occurred prior to death (see Dinani et al., 2000; PartnerRe, 2009). The survival period does not only lower the premium level, but also simplifies the claim assessment, as suffered critical illnesses may be problematic to diagnose if death occurs soon after the event of the critical illness (see Krause, 1998b). In addition, this allows for a clear distinction between the CII from a life insurance contract, in that a CII is intended to (financially) support the *living* with a dread disease (see Krause, 1998b). The claim assessment refers to the decision regarding the acceptance of the received claim and the required time to verify the claim is denoted as the *assessment period*, which should take less than a year (see ABI, 2011). The specifics of the CII contract design are illustrated in Figure 2.

Figure 2: Illustration of waiting, survival (deferred) and assessment period



[4] In the U.K. CI market, a waiting period is typically not required.

2.3 Types of critical illness insurance

CII can be sold as *riders* to other insurance contracts, as separate *stand-alone* policies or as an element integrated within a policy structure (see, e.g., Baars and Bland, 1993; Haberman and Pitacco, 1999).[5] In the case of riders or integrated insurances, CII are sold with, among others, endowment policies, whole life and term life insurance (see, e.g., ABI, 2011), and premiums of the main insurance may be waived upon diagnosis of a critical illness (see Sharma and Tsui, 2006). Furthermore, especially in the German market, CII often supplement or replace disability insurances, depending on the coverage of disability and its definition (for exemplary definitions, see ABI, 2011).

In addition to the policy structure, CII may also be categorized in terms of the types of benefits. The *accelerated benefit* provides a payment of a proportion of the total sum insured of the original insurance policies (e.g., the death benefit cover of an underlying life insurance) upon diagnosis of a critical illness, thus reducing the remaining sum insured of the original policy, whereas the *additional benefit* is paid separately and in addition to other sums insured (see, e.g., Munich Re, 2001).

Compared to an additional benefit, the acceleration of the sum insured implies lower premium rates, which may have a positive influence on an insurer's sale potential (see, e.g., Dash and Grimshaw, 1993). Furthermore, covers combined with life insurance and with an accelerated benefit are less affected by the underestimation of incidence rates of critical illnesses, because these illnesses are main causes of death and therefore, the result is an advanced payment of a benefit that would have been incurred regardless (see, e.g., Munich Re, 2001). This lower sensitivity is of importance in the case of unreliable data (see Baars and Bland, 1993). From the insurer's perspective, the risk of adverse selection and moral hazard are lower than in the case of additional benefits (see Schattschneider and Wittkamp, 1997), and the reserves of the main policy can be used for the CI benefit , since the coverage provided by the main insurance is also reduced (see Munich Re, 2001). From the policyholder's perspective, in contrast, the reduction of cover for the main insurance generally results in a lower provision for dependents (see Schattschneider and Wittkamp, 1997).

[5] In the case of riders, the coverage of critical illnesses can only be purchased as an attachment to a main insurance contract that can still be bought on its own. In contrast, if that coverage is integrated in a policy structure, the resulting product can only be acquired in combination with the critical illness cover.

On the contrary, additional benefits ensure that in the event of a critical illness, the life cover remains unaffected (see, e.g., Schattschneider and Wittkamp, 1997). This feature may be valuable, because the policyholder will be classified as a high risk following the suffering of the critical illness (see, e.g., Dash and Grimshaw, 1993) and further purchases of an additional death cover will either be expensive or refused by insurers. This aspect also implies a higher premium level (see Dash and Grimshaw, 1993) and a potential oversupply for the insured with respect to, for example, the provision for dependents (see, e.g., Schattschneider and Wittkamp, 1997). Furthermore, in case the insured dies soon after the occurrence of the critical illness, the claim assessment may be complicated, e.g., if the insured suffered a heart attack; hence, the resulting benefit payment may be too late to cover the insured's financial distress. This issue can be solved by either generally implementing a survival period to ease the claim assessment, or if the underlying contract is a life insurance, by making a prompt payment of the CI benefit as an acceleration of the death benefit, so that financial distress is lessened. In the latter case, which represents a special product feature, the full death benefit is reinstated at the end of the survival period. Finally, additional benefits have the advantage that they can also be combined with insurance contracts without life cover, such as disability insurances (see Dash and Grimshaw, 1993).

2.4 Market development in selected markets

As previously stated, with cancer riders offered in Israel, Japan and the US as antecessors, the first critical illness policies were offered in South Africa in 1983 as simple riders to life insurance policies with limited coverage, including the four basic dread diseases (see Dash and Grimshaw, 1993). CII has been very successful in South Africa, because the social security system did not cover expensive medical treatments by specialists and because of high risk awareness for heart diseases (see Krause, 1998a). Product development in South Africa later included the possibility of multiple claims, linkage between severity level and dread disease benefit, coverage of the policyholders' family, coverage of multiple lives, and optional reinstatement of the dread cover (see Elliot, Hilary, and Temple, 2006).

In the UK, the CII market strongly expanded during the 1990s, with the majority of CI covers being accelerated benefits with a focus on mortgage products, where dread disease cover and income protection were combined (see Dinani et al., 2000; König et al., 2011). After a sales peak in 2002, a steady decrease could be observed until 2009, where approximately 20% of the working population owned a CII, still suggesting a saturated market (see PartnerRe, 2009). Among the reasons for this development (see PartnerRe, 2009 for the following

reasons) was the fact that following the success of CII, insurers strongly extended the covered conditions, thereby applying different terminologies, which contributed to confusion among consumers, higher rates of declined claims and thus also reputational issues, causing ABI (2005) to introduce standardization rules. In addition, the reinsurance market in 2003 implied a strong negative impact as capacities were reduced and stricter terms were launched due to adverse claims experiences and concerns about future development in medical science. The downturn in the mortgage market further contributed to the decline of CII sales, being the main product design in the UK.

In Canada, CII was first introduced in 1993/1994, mostly as non-standardized stand-alone policies and gained relevance due to an aging population and increasing medical costs (see Munich Re, 2001; Mooney, 2007). In contrast to the UK market, mortgage protection only played a minor role in CII (see Mooney, 2007) and most policies featured a return of premiums guarantee in case of death, maturity or surrender (see Mooney, 2007; Munich Re, 2001).

The US CII market started in the beginning of the 21st century, but faced a lack of awareness amongst potential clients and advisors, as well as concerns about litigation (see Mooney, 2007). According to Mooney (2007), there is growth potential in the US and Canadian markets, but the major challenges concern marketing issues and consumer acceptance (see, e.g., Elliot, Hilary, and Temple, 2006). In general, cancer policies play a considerable role in the US, similar to Japan, and contribute to the overall CI premium income (see König et al., 2011).

Further CII markets comprise, e.g., Australia ("trauma (recovery)" insurance, mostly written on an annual basis without a guaranteed premium; see Munich Re, 2001), India (CI rider to whole life or endowment with accelerated or additional benefit; see Sharma and Tsui, 2006), Japan (cancer covers are common; see König et al., 2011) and Germany (first introduced in 1991 with a non-German name, which hindered sales according to Krause, 1998b; in 2011, about 150,000 stand-alone policies were in force; in 2012, only 14% of German life insurers offered CII, see Dabringhausen, 2012).

Today, CII covers have a considerable market share in Asian insurance markets (see General Re, 2007). According to estimates in König et al. (2011), half of the global dread disease premium volume is earned in Asia, particularly in South Korea, China, Malaysia and

Singapore, with a worldwide annual CII premium volume (including cancer products) of over €20 billion, representing about 1% of the global life premium volume.

Overall, the consideration of the global market development in selected countries has already emphasized several relevant success factors and challenges regarding the development of CI products, including the social security system and health care system, risk awareness and awareness of the product in general, along with consumer acceptance and marketing issues, the availability of reinsurance solutions and medical progress, as well as the risk of litigation. This will be relevant when discussing challenges and opportunities for insurers in Section 4.

3. Comparisons with Alternative Products

In the following section, we compare CII to other existing products in order to examine their relevance and role as extensions, with coverage not obtained by other products or substitutes.

3.1 Cancer insurance

Unlike CII, specified disease policies provide insurance cover for a single critical illness, such as cancer, heart attack or stroke (see, e.g., NAIC, 2006; NCDOI, n.d.). In this instance, cancer insurance serves as an example for these types of policies and the stated arguments may be transferred to other types of specified disease policies.

Cancer policies supply a financial backup for either all types of cancer or only certain types that had not been diagnosed prior to signing the contract or during the waiting period (see König et al., 2011; NAIC, 2006; NCDOI, n.d.). Upon the diagnosis of cancer, these types of insurance pay limited benefits based on the health care costs and expenses that are incurred in connection with the treatment of cancer, such as hospitalization and surgery (see NCDOI, n.d.). Non-medical expenses such as home care and rehabilitation costs, however, are generally not covered (see NAIC, 2006). In addition, potential exclusions apply to other cancer-related illnesses, e.g., pneumonia and infections (see NCDOI, n.d.). Cancer policies may be classified into three categories: expense incurred policies, indemnity policies and first diagnosis policies. Expense incurred policies pay benefits that are proportional to the expenses for all covered treatments, whereupon maximum limits apply. In contrast, indemnity policies provide a payment for all covered treatments, but limits apply for each individually covered treatment. The first diagnosis policies are similar to a small CII that pays a lump sum upon the first diagnosis of cancer (see NCDOI, n.d.).

First diagnosis policies are similar to CII the most, as the other types of policies are small health insurance policies and provide less flexibility than CII. Due to the coverage of fewer risks, CII substitutes cancer policies. Nevertheless, cancer policies may be an alternative for less wealthy individuals, since they exhibit a lower premium level than CII. In addition, clients who have suffered a CI other than cancer, may be refused purchase of a CII, but may still apply for cancer insurance.

3.2 Health insurance

Compared to CII, health insurance policies do not need a precise definition of covered risks, because they cover all health impairments. Thus, the aim of health insurance is to reinstall the initial health state and to cover all necessary medical treatments, independent of the disease (see Stein, 2000). In Germany, for instance, the benefits provided by the statutory health insurance must be sufficient, appropriate and economic, but may not exceed the necessary level. If the medical treatment occurs in a medical facility without a contractual agreement with the statutory health insurance, the insured has to pay for the expenses that exceed the costs of the standard treatment (see, e.g., Zweifel, Breyer, and Kifmann, 2009). Contrastingly, in Japan, the benefits cover a good portion of medical expenses; the rest is paid for by the insured to the medical facilities. Cost-sharing by the insured is limited, however, and the amount in excess is provided as a high-cost medical care benefit, which is determined based on the age and the income of the insured person. In addition, dependents are also covered by the health insurance (see Kemporen, 2007).

CII fills the gap generated by health and disability insurance policies (see Munich Re, 2001); therefore, CII may not replace health insurance. Instead, it provides the financial resources for covering medical treatments that are, if at all, not sufficiently covered by the health insurance, including the limited reimbursement of treatment abroad. Additionally, health insurance policies do not pay for non-medical expenses, such as the reconstruction of the insured's home due to disabilities or severe illnesses.

3.3 Disability insurance

In the literature, the critical illness cover is regarded as an extension of disability insurance, as well as health insurance and enables insurance companies to offer a full product range (see Krause, 1998b; Munich Re, 2000; Munich Re, 2001). In particular, persons with a high risk occupation have a better chance to contract CII than disability insurance, given that disability

is not an element of the coverage supplied by CII. Customers with previous illnesses may be rejected following an application for either type of insurance, but generally have a higher chance of obtaining a CII contract, because single risks may be either excluded in the CI cover or charged by additional risk loadings (Bocquel, 2007).

Disability insurance policies and CII are both fixed-benefit insurances, but vary in terms of the type of benefit they provide. Disability insurance provides annuities in the case of disability; on the other hand, CII pay a lump sum upon the diagnosis of a CI. Among various definitions, disability is in this context defined as a permanent inability to practice an occupation that suits the insured's education, work experience and social situation due to disease, personal injury or decomposition of strength (see, e.g., ABI, 2011; Voit and Neuhaus, 2009). In contrast to CII, the insured event of disability considers the insured's occupation; therefore, disability insurance aims to cover a specific occupation and to prevent a loss of social status (see Voit and Neuhaus, 2009). Like CII, disability insurance also aims to provide income protection, but CII generally provides more flexible protection due to the lump sum it pays out.

Both types of insurances are sold as a main insurance, as well as a rider to related insurance policies, e.g., life insurance (see Voit and Neuhaus, 2009). Without severity-based definitions of critical illnesses and staged benefits, which are linked to the impact of these illnesses, CII is considered less complex than disability insurance. In the context of CII, the insured event is the diagnosis of a covered critical illness, while compared to disability insurance, no evaluation of the degree and the duration of the disability or the inability to work are needed (see Pfeifer, 2009). However, with the adoption of severity-based definitions and staged benefits, the degree and the severity of covered illnesses are considered during the claims assessment and in this case, CII is no longer necessarily less complex than disability insurance.

Due to the existing connections between disability and critical illnesses, the coverage of both products exhibit similarities. Nevertheless, many medical conditions that cause a disability, e.g., impairments of the musculoskeletal system and mental illnesses such as depression, are not covered by CII. At the same time, critical illnesses may result in a non-permanent disability, but only a few, such as strokes actually cause a permanent disability. Therefore, basic CII and disability insurance are generally not substitutes for each other. This issue has also been addressed by innovative CII solutions, which has resulted in the additional coverage of total and permanent disability (TPD) as a "catch-all" benefit (see Baars and Bland, 1993),

as described in the previous section. This is a considerable extension of coverage, even though the definitions of disability vary considerably (see PartnerRe, 2009). Several model definitions of TPD have been listed by ABI (2011) and, in effect, CII *may* represent a substitute depending on the chosen definition of disability for each product and in particular on the degree and permanence of the disability. For instance, on the one hand, TPD may be defined as the insured's inability to perform a suited occupation ever again according to the individual's personal education and work experience; in such a case, CII substitutes the previously described disability insurances, but only in the case of a total disability. On the other hand, TPD may also be specified as the inability to do any occupation at all ever again, so that CII is no substitution. In summary, the scope of TPD included within CII is typically much more limited and, thus, overall, both insurance products, when combined, generally provide good coverage without overlaps.

3.4 Personal accident insurance

The aim of personal accident insurance is to protect the insured against a loss or impairment of the ability to work (see, e.g., Mehrhoff, Meindl, and Muhr, 2010). This insurance covers invalidity due to a sudden accident that occurred unintentionally, but excludes illnesses as a cause for the payment of benefits (see, e.g., Voit and Neuhaus, 2009). The benefit, either a lump sum or an annuity, is paid upon determination of invalidity, which is defined as permanent physical or mental damage and depends on the degree of permanent invalidity and on the agreed insured sum (see Mehrhoff, Meindl, and Muhr, 2010). In contrast, CII usually does not consider the degree of an illness and is therefore less complex (except when including staged benefits and severity-based definitions of critical illnesses). Similar to CII, the insured event is independent of the occupation and several claims are excluded, especially if they occurred due to war, criminal acts and intentionally caused injuries (see, e.g., GDV, 2014). In the case of personal accident insurance, accidents due to strokes and reduced consciousness are generally also excluded, unless these conditions were caused by a covered accident (see, e.g., Mehrhoff, Meindl, and Muhr, 2010).

Because of the coverage of different events, personal accident insurance policies and basic CII are not substitutes if cases such as loss of limbs are not included in the CI cover. Nevertheless, personal accident insurance policies represent an alternative for clients who have been suffering a critical illness and who have not contracted a CII. In contrast to disability insurance, the inclusion of total and permanent disability does not result in a potential substitution of personal accident insurances by CII, because the loss of a leg

unintentionally caused by an accident, for instance, does not necessarily affect the inability to work or to look after oneself. However, innovative CII products may also include accident-related conditions, such as loss of limbs, paralysis and burns or alternatively, accidents (see Skandia, 2012), so that, in effect, personal accident insurance is substituted. In the latter case, however, the resulting products are technically no longer CII.

4. Challenges and Opportunities From an Insurers' Perspective

Among the main challenges for insurers offering CII are medical progress alongside improved diagnoses, the availability of precise definitions and clear diagnoses of the covered diseases, data availability for adequate pricing and risk assessment, various problems regarding asymmetric information, as well as the complexity and duration of the underwriting process, which may cause dissatisfaction among customers (see PartnerRe, 2009). However, CII also offers major opportunities for insurers in terms of innovative product design, which can help to enhance their existing portfolio and gain market share. Further opportunities are provided by an increasing demand as a result of demographic trends, an increase in critical illness incident rates along with lower mortality rates of persons suffering a critical illness,[6] as well as marketing aspects.

4.1 Availability of precise definitions and clear diagnosis

Unlike health insurance that covers all impairments of health, CII need a *precise definition* of the covered risks, i.e., the specific diseases that are being insured against (see Stein, 2000). The availability of a clear and precise definition of a covered critical illness that is sustainable and thus stable over time, is of particular relevance when insuring against a disease, as it eases the claim assessment and avoids legal disputes. However, advances in medical technology have increased the pressure to continuously update conditions and definitions in new CII policies (see PartnerRe, 2009). In the past, this variation of definitions within the portfolio of an insurance company and among competitors led to a different assessment of claims, which resulted in negative publicity for the insurance industry as a whole and uncertainty for customers when comparing products between companies (see Baars and Bland, 1993; Krause, 1998a). As a solution, the consistency of definitions is established by the standardization of conditions, which aims to support market transparency, consumer protection and as a result,

[6] In Germany, for instance, the estimated percentage growth rate of dread disease between 2007 and 2050 according to Beske et al. (2009) is as follows: dementia (144%), heart attack (109%), stroke (94%) and cancer in general (52%). The more likely occurrence of dread disease is also enhanced due to demographic trends.

trust in the insurance product and the promotion of the coverage (see ABI, 2011; König et al., 2011; Schattschneider and Wittkamp, 1997). Nevertheless, standardizations also potentially restrict the improvement of the cover, as well as innovations and may therefore also be regarded as anti-competitive (see PartnerRe, 2009).[7]

The *certainty of the diagnosis* is given for most of the insured critical illnesses and ensured by having the diagnosis conducted by specialists (see Munich Re, 2008). However, difficulties exist with the diagnosis of Alzheimer's disease and multiple sclerosis, because these illnesses develop over time as opposed to occurring suddenly, similar to other covered risks such as stroke or heart attack (see Baars and Bland, 1993; Dash and Grimshaw, 1993; Dinani et al., 2000).[8] Thus, less precise definitions and the complicated diagnoses of these diseases may result in claims admittance problems for the insurer and as a result, in longer processing times. Consequently, the living benefit will be paid at a later stage of the disease and, hence, the coverage provides no real advantage for the customer, but for the insurer acts as a tool for product differentiation. In return, the insurer may face criticism for failing to meet the policyholder's expectations (see Dash and Grimshaw, 1993).

4.2 Pricing and risk assessment – data availability

The existence of an adequate actuarial basis is highly relevant for the pricing and risk assessment of insurance products. As such, the original resistance to CII was based on the unavailability of reliable pricing data (see Baars and Bland, 1993). This problem is enhanced by the difficulty of transferring disease data to different countries as a result of local customers' habits, the local health system, as well as other environmental influences. Furthermore, different cultures have developed different levels of risk awareness for certain diseases, which may result in diverse degrees of adverse selection and additionally complicates the transfer of data; however, it also generates higher sales potential (see Krause, 1998a). In general, the actuarial basis for CII is exposed as having a high risk of change, as advances in medical sciences are hard to predict and have an essential impact on the incidence rates of specific diseases and surgical procedures (see Baars and Bland, 1993; Munich Re,

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[7] Standardized definitions are issued by insurance organizations like the Association of British Insurers (see ABI, 2011) or by the government and are provided in Canada, Israel, Malaysia, Singapore, South Africa, Taiwan and the United Kingdom, among others (see, e.g., Elliot, Hilary, and Temple, 2006; König et al., 2011). Specific benchmark definitions may be found, for instance, in ABI (2011), Baars and Bland (1993) and Munich Re (2008).

[8] In addition, the diagnosis of, for example, Alzheimer's disease proves to be difficult, as the common symptoms such as memory loss and lack of concentration may have other causes, including vitamin deficiency or depression (see EB, 2012).

2001). On the one hand, the improvement of medical technology may reduce the incidence rates of critical illnesses, should enhanced treatments and earlier diagnoses of minor conditions be able to prevent more severe conditions. On the other hand, improved detection techniques will have an increasing effect on the incidence rates of critical illnesses (see PartnerRe, 2009).

4.3 Asymmetric information

As in case of other insurance products, asymmetric information is an issue that needs to be considered in the design of CII policy. At the time of contract conclusion, the insured may have observed symptoms that suggest a critical illness and thereupon purchases a dread disease cover. The resulting risk of adverse selection is generally higher than for death covers (see Sharma and Tsui, 2006) and may be reduced by introducing an adequate waiting period, as previously described (see Figure 2). Additionally, higher risk awareness and insured sums that surpass the likely financial impact resulting from a critical illness stimulate adverse selection and fraud (see Krause, 1998a; Sharma and Tsui, 2006). Thus, in addition to a waiting period, maximum benefit levels may be needed to limit adverse selection (see Munich Re, 2001). After signing the insurance contract, potential changes in the behavior of the insured, e.g., different nutrition or a decrease in caution may further influence the incidence rates of covered critical illnesses (see PartnerRe, 2009).[9]

4.4 Innovations and further product designs

Several developments in recent years have influenced the expansion of innovations in CI product designs. On the one hand, advanced medical technology has resulted in increasing the survival rates of patients suffering from critical illnesses and therefore, the demand for further coverage following the first critical illness has been on the rise (see König et al., 2011). On the other hand, diagnostic procedures have been improved, implying potentially higher claims numbers. These and other developments have led to various product innovations that can be developed further in the future.

Among the product innovations to address the increased demand has been the grouping of benefits. Here, groups of conditions that exhibit a high correlation, e.g., heart attack and

[9] The major health risk factors are therefore numerous and highly dependent on the covered illnesses. For instance, coronary disease and strokes are influenced by sex, age, body mass index, smoking status, diabetes status, cholesterol level, blood pressure and genetics (see Macdonald, Waters, and Wekwete, 2005a).

stroke, are introduced, as the probability of the occurrence of a specific critical illness is higher if the same or a related illness has already been diagnosed once before. In such a case, for each occurrence of a critical illness, the whole group is excluded from further coverage and the critical illness cover is reinstated. The corresponding benefit scheme is described as *multiple benefits* (see, e.g., Elliot, Hilary, and Temple, 2006; König et al., 2011). So-called *buy-back options* are similar to multiple benefits, as they provide the possibility for a reset of the death benefit in the case of accelerated benefits. By exercising this option, the death benefit is reinstated either gradually or instantly following a defined period after the incidence of the dread disease and in return, the premium is increased (see Dinani et al., 2000; Munich Re, 2001).

With regard to changes in diagnostic procedures, which potentially causes a raise in claim numbers, *severity-based definitions* were introduced as a protection to generally limit claims, a trend identified by PartnerRe (2009) since, e.g., early stage cancer is not covered according to ABI standards (see also ABI, 2011). Alternatively, instead of using severity-based definitions, *staged benefits*, which are linked to the impact of critical illnesses, may be implemented to partially absorb risks due to changes in diagnoses (see, e.g., Elliot, Hilary, and Temple, 2006). The third alternative for capturing progress in medical science includes *reviewable benefits*. This concept comprises a change of coverage and the associated premium rate, so that the policy is designed based on the current medical technology (see Baars and Bland, 1993). In addition, the benefit may be linked to inflation (see Dash and Grimshaw, 1993) and in the event of surgical procedures, a partial benefit may be paid prior to surgery, while the remaining benefit is provided afterwards. In the latter case, a confirmation of the need for surgery is required (see PartnerRe, 2009). Overall, all of these adjustments absorb the impact of advances in medical technology, yet they increase the product complexity compared to the traditional CI product (see PartnerRe, 2009). These advances and their impact on claim experiences also influence unguaranteed premium rates that are periodically renewable and a common product feature in, for example, South East Asia (see Cypris and de Braaf, 2013). In contrast, policies with guaranteed premiums face increasing pressure to update their conditions and definitions (see PartnerRe, 2009).

In addition, because the likelihood of critical illnesses increases considerably in old age, restrictions regarding the age at entry and the age at expiry may be introduced in the product design (see Schattschneider and Wittkamp, 1997). Although there is a clear need for CI coverage in old age (see Munich Re, 2000), data reliability may be restricted for this age group and thus, age limits must be considered (see Munich Re, 2001). Moreover, elderly

people exhibit a much higher mortality rate after suffering a critical illness, thereby complicating the claim assessment. The tools for easing claim assessment in such a case were discussed in the previous section.

Further innovations include increased coverage after childbirth or marriage (see Dash and Grimshaw, 1993), coverage of the policyholder's family (see Elliot, Hilary, and Temple, 2006) and the introduction of group-specific products (see, e.g., Sharma and Tsui, 2006). In East Asia, for example, CII products are specifically designed to cover primary risks to female health, such as specific types of cancer and pregnancy complications (see, e.g., PartnerRe, 2009).

4.5 Demand factors and potential buyers

The introduction of CII generally depends on the national health care and social security system in the area (see Schattschneider and Wittkamp, 1997). Especially in countries with less evolved social security systems, where expensive medical treatments are not covered, the coverage of expensive medical treatment is of particular interest (see, e.g., Krause, 1998a; Munich Re, 2001). However, protection against financial hardship is also important in countries with an extensive and well-developed social security system. The sales success of CII in South Africa and the UK showed that the development of the social security system is not the only or primary indicator, but simply one factor that determines the success of CII. Others include objective factors, such as incidence rates of critical illnesses and mortality rates (especially the increase of survival rates after suffering a critical illness)[10], as well as subjective factors such as the individual's habits and the general demand for insurance (see Krause, 1998b). In addition, the demand for CII depends on the degree of risk aversion with respect to the potential medical costs, the income prior to suffering the disease, as well as the demand for compensation of utility loss caused by the critical illness (see Longo and Grignon, 2009).

Apart from the general demand factors in the market as a whole, the incentive to purchase protection against critical illnesses and to ease a financial burden also varies among potential clients. In the case of individuals without dependents, for instance, the lack of support provided by a family creates a need for financial backup in the event of a severe disease (see,

[10] In the UK, for example, the mortality rates for cancer (1979-2003), heart attacks (1989-2003) and strokes (1989-2003) were decreasing across all genders and age groups, while the incidence rate was either slightly decreasing or even increasing, according to the Critical Illness Trends Research Group (2006).

e.g., Krause, 1998b). Additionally, individuals with a relatively high living standard generally intend to maintain their current living standards, whereas young individuals need to safeguard themselves against liabilities such as mortgages and car loans. In contrast, clients with families aim to protect their dependents (see Stein, 2000).

In addition, CII is not only relevant for individuals, but also for companies and those who are self-employed. For this target group, CII can be considered equivalent to a key person insurance that usually provides financial protection against a decline in sales, the appointment of qualified substitutes and contract penalties in the case of breach of deadlines (see Reddmann, 2009). On the one hand, key person insurance is important if the self-employment or the existence of a company is at stake after a key person suffers a critical illness (see Stein, 2000). On the other hand, this protection may be relevant for partnerships, as the remaining partners may buy out the partner who was diagnosed with a critical illness (see Munich Re, 2000). In such a case, the benefit levels are relatively high for this type of insurance (see Munich Re, 2001).

Factors that hinder the demand and success of these products, despite the general relevance of the product for certain target groups include a lack of awareness among clients and advisors, and concerns about litigation, as was the case in the US (see “market development” in the previous section; Mooney, 2007).

4.6 CII marketing aspects

Following the initiation of CII, sales were usually low in most markets during the first five years, but the products thereafter gained importance (see Munich Re, 2000). Munich Re (2000) suggested two marketing approaches for advertising CII. The first approach is based on pure statistics and focuses on the *likelihood of critical illnesses*, thus explicitly relying on probabilities as a sales message. The second emphasizes the *consequences on the life-style* by highlighting the impact on the quality of life and the potential financial distress incurred. However, as Sharma and Tsui (2006) point out, the utilization of people’s fears regarding the severe impact of critical illnesses as applied by former marketing strategies contributed to a negative perception of CII. Based on these experiences, marketing emphasis was as a result instead placed on the positive aspects of the insurance product and the specific needs that are covered in order to improve this perception.

In practice, coverage is commonly designed to match the most common diseases in the respective insurance market. In a survey conducted from 2000 to 2004 by General Re (2007), the core diseases – cancer, heart attack, stroke, kidney failure and by-pass surgery – accounted for most claims in China, the UK, Malaysia, Hong Kong and Singapore. Thus, the extension of the list of covered conditions alongside these relevant diseases, i.e., the inclusion of less frequent critical illnesses, serves as a method of product differentiation (see, e.g., Baars and Bland, 1993). This differentiation is useful for marketing reasons if the awareness of a certain illness is highly developed. For instance, in the UK, a public campaign by the Multiple Sclerosis Society increased the awareness of multiple sclerosis and insurers who provided coverage of (less frequent) multiple sclerosis experienced a considerable increase in sales (see Krause, 1998a). Extending the list of covered conditions has also been effected due to competition, giving rise to pressure to add new covered conditions. This may be a beneficial innovation, but can also cause confusion among intermediaries and clients, as was the case in the UK described in the previous section (see PartnerRe, 2009).

In addition, the coverage of critical illnesses generally extends conventional life insurances and also fills the gap generated by health and disability insurances (see, e.g., König et al., 2011, as well as the product comparisons in the previous subsection). Thus, in general, the offer of CII enhances the product range of insurance companies and implies a positive impact on sales (see Munich Re, 2000). In Germany, for example, insurance products have recently been introduced that are a combination of CII with basic capability insurance[11], disability insurance, long term insurance and/or personal accident insurance. In this instance, the aim is to provide an alternative product for individuals with a high disability risk, who cannot afford disability insurance yet seek to (partially) protect their financial incomes. From the insurer's perspective, these policies yield an opportunity for further differentiation and additional sales by focusing on specific target groups (see Unterkofler, Briones, and Drayer, 2011).

5. SUMMARY

Against the background of an increasing risk of dread diseases (see, e.g., Critical Illness Trends Research Group (2006); Beske et al. (2009)), a detailed description of critical illness insurances (CII) was provided in this paper, including the coverage, contract types and their market successes in different countries worldwide. In addition, CII was compared to related insurance policies to determine whether it substituted or extended those policies, thus

[11] This product covers body functions that are related to activities of daily living, such as lifting, standing, speaking and sitting, as well as concentration (see, e.g., Pfeifer, 2009).

assessing the market potential. Furthermore, major challenges and opportunities for insurance companies were discussed.

Our study emphasized that opportunities regarding market potential mainly arise from the extensions of existing products. For instance, in contrast to the original policies, the CII policies may include multiple benefits and buy-back options, while the number of covered conditions can be utilized as a method of product differentiation that varies within different insurance markets. Additionally, the loss of bodily functions and so-called “catch-all” benefits, such as total and permanent disability, are integrated into the coverage, influencing comparisons with alternative products and resulting in their substitution.

These opportunities are accompanied by the necessity to ensure a sufficient degree of transparency regarding the coverage provided in order to avoid confusion and frustration among consumers. The challenges also include advances in medical science that may result in improved detection techniques, thus increasing the number of diagnosed critical illnesses and inducing higher survival rates, implying a higher demand for the coverage of financial distress. To date, among others, severity-based definitions, staged benefits and reviewable benefits have been introduced to address this issue. Overall, critical illness insurance generally allows for a relevant extension of the existing product range offered by insurance companies and exhibit multiple opportunities for innovations, despite facing challenges that arise from marketing and scientific progress.

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