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Mini-presentation on

**SPPI for Non-life Insurance Services in the Czech Republic**

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## **1. Introduction**

This paper provides a brief overview on the development and methodological framework of the Services Producer Price Index for 'the Non-Life Insurance Services'.

Since 1991, consumer prices (B2C) for selected representatives have been surveyed (Comprehensive household contents insurance, Comprehensive employee's insurance, Comprehensive juvenile insurance, Motor damage insurance, Motor third-party liability insurance). Monitoring B2B prices for the non-life insurance services did not start until 1994. Currently, the Price Statistics Department focuses on both types of prices (business and consumer prices) in its statistical survey. An aggregate B2All index is not counted for the time being. The Czech insurance market is relatively concentrated (measured according to gross premiums written). However, we can see a gradual decrease of market concentration within last years due to growing competition. The structure of this mini-presentation is based on the Content Development Framework of the Voorburg Group.

## **2. Definition of the service**

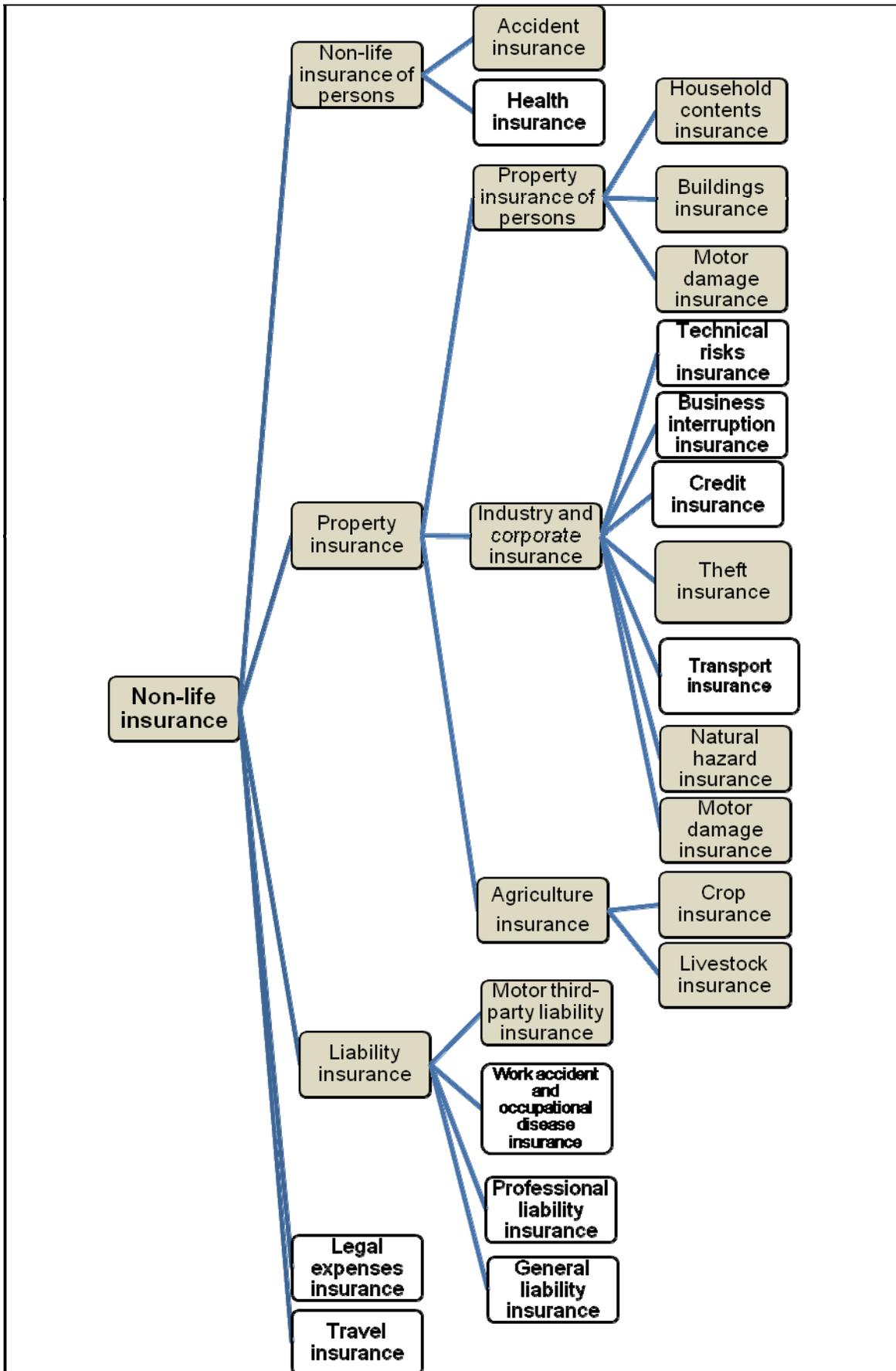
The insurance industry is a specific sector of the economy dealing with insurance, reinsurance and intermediary activities in the field of insurance. This sector ensures the elimination of financial risks affecting people's activities. Insurance and reinsurance companies, insurance providers, the state insurance authority, an insurance association and financial institutions dealing with insurance outside insurance companies (e.g. banks) belong to the institutions related to the insurance industry. Insurance companies can be divided into universal insurance companies (specialized in insurance of all types of risk), life insurance companies (specialized in life insurance), non-life insurance companies (specialized in non-life insurance) and specialized insurance companies (specialized only in an insurance of certain kind of industry). A captive insurance company is a special type of insurance company. It is the institution founded by some business subject focusing on an insuring of own needs with its own capital and reserves.

Next description will be predominantly focused on the non-life insurance.

The non-life insurance includes coverage of a wide range of risks of non-life character namely the risks endangering health and human life, the risks evoking direct material damage and financial loss.

The outline of segments of non-life insurance can be seen in diagram 1.

*Diagram 1 – Types of non-life insurance services. Services covered by the Czech SPPI and CPI are coloured grey.*



1. **Accident insurance** – includes the payment of indemnification in case an accident results in a temporary or permanent physical damage or death of an insured.

2. **Health insurance (private)** – an addition to the mandatory general health insurance and social health insurance.
3. **Household contest insurance** – object of insurance is a set of household equipment. Natural hazards, water conduit risks and the risk of theft are included.
4. **Buildings insurance** – object of insurance is a building. Insurance usually covers the natural hazards, water conduit risks, crash of vehicles into building and the risk of theft (part of building).
5. **Motor damage insurance** – covers damage to motor vehicles, whether the driver had no effect or had completely or partially affected damage. It is based on coverage of the damage (in addition it may be coverage of natural hazard risks, theft risks, vandalism risk, etc.).
6. **Theft insurance** – a type of insurance against theft or damage and destruction of property.
7. **Natural hazard insurance** – covers damage to property caused by a certain natural hazard risks (fire, explosion, lightning, windstorm, etc.).
8. **Crop insurance** – covers damage to crop production. The most common type of insurance is the insurance against hail (the most provable) and further those against flood, storm and frost.
9. **Livestock insurance** – covers damages in connection with mortality, culling or emergency slaughter.
10. **Motor third-party liability instance** – protection of victims in traffic accidents. This insurance is mandatory.

According to the CPA 2008 the non-life insurance services (code 65.12) are divided into several categories: accident and health insurance services (code 65.12.1), motor vehicle insurance services (code 65.12.2), marine, aviation and other transport insurance services (code 65.12.3), fire and other damage to property insurance services (code 65.12.4), general liability insurance services (code 65.12.5), credit and surety ship insurance services (code 65.12.6), travelling and assistance, legal expenses and miscellaneous financial loss instance services (code 65.12.7) and other non-life insurance services (code 65.12.9).

Individual categories mentioned above include further service products on the six-digit level (see table 1).

*Table 1 – Structure of Non-life Insurance Services (CPA classification). Services covered by the Czech SPPI and CPI are in bold.*

CPA 2008	Description	Service Products
65.12.1	Accident and health insurance services	<b>65.12.11 Accident insurance services</b> 65.12.12 Health insurance services
65.12.2	Motor vehicle insurance services	<b>65.12.21 Motor vehicle insurance services, third party liability</b> 65.12.29 Other motor vehicle insurance services
65.12.3	Marine, aviation and other transport insurance services	65.12.31 Railway rolling stock insurance services 65.12.32 Aircraft liability insurance services

		65.12.33 Other aircraft insurance services 65.12.34 Ships liability insurance services 65.12.35 Other ships insurance services 65.12.36 Freight insurance services
65.12.4	Fire and other damage to property insurance services	<b>65.12.41 Fire damage to property insurance services</b> <b>65.12.49 Other damage to property insurance services</b>
65.12.5	General liability insurance services	65.12.50 General liability insurance services
65.12.6	Credit and surety ship insurance services	65.12.61 Credit insurance services 65.12.62 Surety ship insurance services
65.12.7	Travelling and assistance, legal expenses and miscellaneous financial loss insurance services	65.12.71 Travelling and assistance insurance services 65.12.72 Legal expenses insurance services 65.12.73 Miscellaneous financial loss insurance services
65.12.9	Other non-life insurance services	<b>65.12.90 Other non-life insurance services</b>

In the Ramon Eurostat's Metadata Server (classification CPA 2008), subcategories of the non-life insurance services are described as follows:

**The code '65.12.11'** includes underwriting services of insurance policies which provide accidental death and dismemberment insurance, that is, payment in the event that an accident results in death or loss of one or more bodily members (such as hands or feet) or the sight of one or both eyes as well as underwriting services of insurance policies which provide periodic payments when the insured is unable to work as a result of an accident.

**The code '65.12.12'** includes underwriting services of insurance policies which provide protection for hospital and medical expenses not covered by government programs and, usually, other health-care expenses such as prescribed drugs, medical appliances, ambulance, private duty nursing, etc. As well underwriting services of insurance policies which provide protection for dental expenses or underwriting services of insurance policies which provide periodic payments when the insured is unable to work as a result of an illness.

**The code '65.12.31'** includes underwriting services of insurance policies which cover risks relating to the use of:

- railway rolling stock

Risks covered include liability and loss of or damage to railway rolling stock.

The code 65.12.32 includes underwriting services of insurance policies of third party liability which cover risks relating to the use of:

- aircraft
- satellite launching liability insurance services

**The code '65.12.33'** includes underwriting services of insurance policies, other than for third part liability, which cover risks relating to the use of:

- aircraft
- satellite launching insurance (except liability) services

**The code '65.12.34'** includes underwriting services of insurance policies of third party liability which cover risks relating to the use of:

- passenger and freight vessels, whether operating on oceans, coastal waterways or inland waterways

**The code '65.12.35'** includes underwriting services of insurance policies, other than for third part liability, which cover risks relating to the use of:

- passenger and freight vessels, whether operating on oceans, coastal waterways or inland waterways

**The code '65.12.36'** includes underwriting services of insurance policies which provide coverage, additional to that provided by transport companies, for risks of damage to or loss of freight

**The code '65.12.21'** includes underwriting services of insurance policies which cover all liability arising out of the use of motor vehicles operating on land, including those used to transport paying passengers or freight.

**The code '65.12.29'** includes insurance services covering expenses arising from the loss of or damage to motor vehicles operating on land.

**The code '65.12.49'** includes underwriting services of insurance policies which cover risks of damage to or loss of property such as theft, explosion, storm, hail, frost, other natural forces, radioactive contamination and land subsidence. As well boiler and machinery insurance, which covers property spoilage from lack of power, light, heat, steam or refrigeration.

**The code '65.12.50'** includes underwriting services of insurance policies which cover risks of all types of liability including liability for defective products, bodily injury, property damage, pollution, malpractice, etc., other than liability covered in subcategory 65.12.21 (motor vehicle liability insurance services), 65.12.3 (marine, aviation and other transport liability insurance services) and 65.12.4 (property liability insurance services).

**The code '65.12.61'** includes underwriting services of insurance policies which cover risks of excessive credit losses because of debtor insolvency

Included are export credits, instalment credits, mortgages, agricultural credits etc.

**The code '65.12.62'** includes underwriting services of insurance policies which cover risks of non-performance or failure to satisfy a contractual financial obligation by a party to a contract or agreement.

**The code '65.12.71'** includes underwriting services of insurance policies which provide protection for travel related expenses (typically provided in a package), such as:

- trip cancellation, interruption or delay
- lost, delayed or damaged luggage
- accident and health medical expenses
- repatriation of remains

**The code '65.12.72'** includes underwriting services of policies covering legal expenses and litigation costs.

**The code '65.12.73'** includes underwriting services of insurance policies which cover risks of miscellaneous financial loss, that is, expenses arising from the following risks: loss of employment, insufficiency of income (general), bad weather, loss of benefits, continuing

general expenses, unforeseen trading expenses, loss of market value, loss of rent or revenue, indirect trading losses (other than those mentioned above), other financial loss (non-trading) and other forms of loss.

As mentioned in the chapter 'Introduction', indices of non-life insurance services describe development of both business and consumer prices. Concerning the CPI (the consumer price index) services are selected and structured according to the COICOP classification. The CPI covers insurance related to housing, health-related insurance and transportation-related insurance. In terms of CPA 2008 representatives of services provided consumers mentioned above correspond to CPA sub-categories 65.12.11, 65.12.21 and 65.12.4.

### **3. Pricing unit of measure**

The nature of price representatives (e.g. insurance against theft of movable property - in business), the type of client (e.g. enterpriser) and the pricing method (e.g. direct use of prices of repeated services) are taken into account during the determination of pricing unit of measure.

Concerning the non-life insurance services a combination of 'Model pricing/Direct use of prices of repeated services' is used as the standard pricing method.

More detailed analysis will be introduced in chapter 8 'Pricing methods and criteria for choosing of various pricing methods'.

## **4. Market Conditions and Constraints**

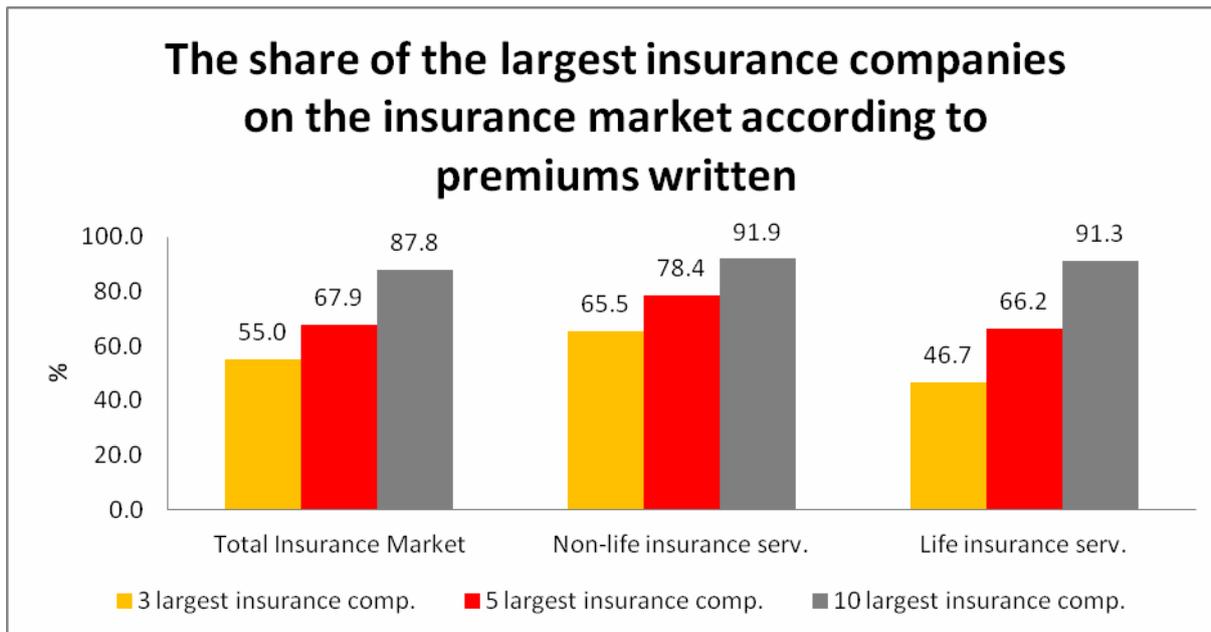
### **4.1 Size of the industry**

In this chapter, the basic characteristics of the insurance market comes from the results stated in the report on Supervision of financial markets of the Czech National Bank and the Annual report of the Czech insurance association.

The Czech insurance market comprise of 35 domestic insurers, 16 foreign insurance branches from the EU and one branch of a third-country insurance company (Switzerland). Austrian insurance companies have the largest representation in the Czech insurance market via their branches (five branches). Other branches are from the UK and Germany (three branches each). With the exception of insurance companies and foreign insurance branches mentioned above, EU and EEA insurers and their foreign branches can also operate on Czech insurance market on the basis of the freedom to provide temporary services. In 2009, the total number of insurance companies amounted to 614 and the number of employees was around 14.5 thousand.

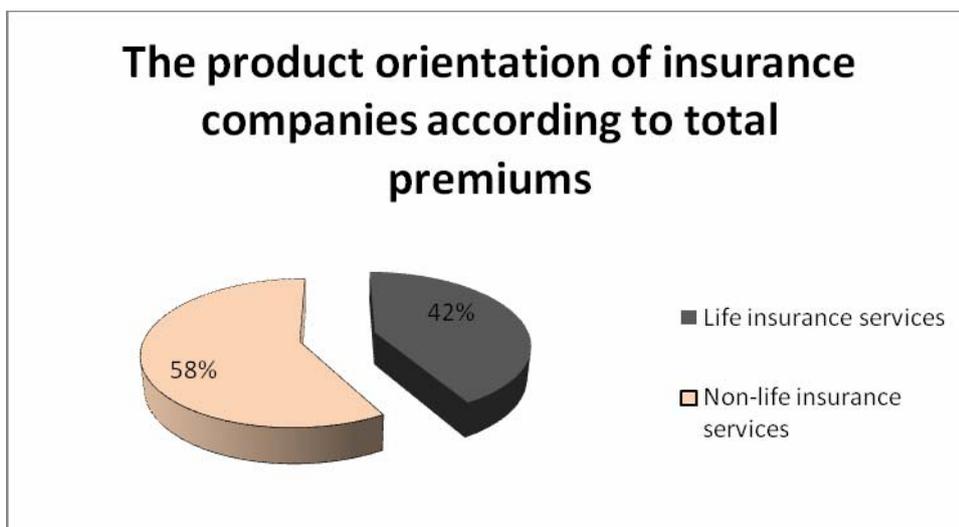
Large companies cover more than a half of the turnover (gross premiums written) on the insurance market (see graph 1 and 2).

*Graph 1 – Structure of insurance companies (Source: Czech National Bank - Financial Market Supervision Report, 2009)*



The Czech National Bank and the CSO Service Statistics represent sources of information on turnover (gross premiums written). The results of both sources are largely in accord. In 2009, the total value of premiums for the insurance market reached € 5.8 billion according to the Czech National Bank. The share of premiums of the life and the non-life insurance is shown in graph 2.

*Graph 2 – The share of life and non-life insurance services (Source: Czech National Bank - Financial Market Supervision Report, 2009)*



Although the life insurance slightly reported increase in recent years, weight of the non-life insurance is still high.

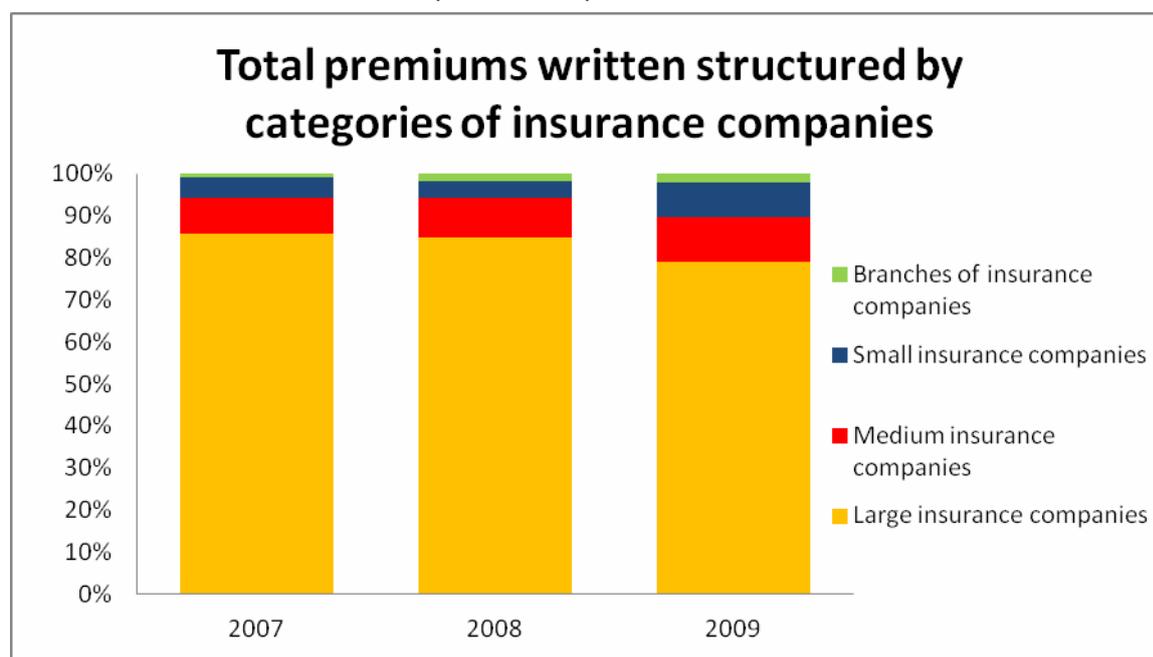
The following table shows a detailed structure of the distribution of non-life insurance turnover (see table 2).

Table 2 – Gross premiums written by industry insurance (Source: Czech National Bank - Financial Market Supervision Report, 2009)

Premiums written by industry insurance	CPA 2008	Turnover	
		Bill. €	%
Total non-life insurance	65.12	3.36	100.0
Motor third-party liability insurance	65.12.21	0.98	29.08
Damage to property insurance	65.12.4	0.79	23.60
Motor damage insurance	65.12.29	0.67	19.90
General liability insurance	65.12.5	0.47	13.95
Accident and health insurance	65.12.1	0.18	5.48
Other non-life insurance	65.12.3, 65.12.6, 65.12.7, 65.12.9	0.27	7.99

As can be seen in Table 2, 'Motor third-party liability insurance' (65.12.21) and 'Damage to property insurance' (65.12.4) have the most relevant share on the non-life insurance market.

Graph 3 – The distribution of insurance companies based on gross premiums written (Source: Czech National Bank - Financial Market Supervision Report, 2009)



Large insurance companies represent almost 90% of the total sales. However, they are losing on behalf of small and medium insurance companies (see graph 3).

## 4.2 Special condition and restrictions

Prosecution conditions on insurance activities and the list of all insurance types are noted in the Act no. 363/1999, on insurance industry. The licence permission is given by the Czech

National Bank, which is also a supervisor. Insurance activities are freed from a tax without the claim on the tax deduction.

### 4.3 Record keeping practice

Information on prices and turnover in the field of insurance (in this case non-life insurance) is obtained through a monthly statistical reporting form. There are several sections for monitoring both business and consumer prices in the frame of statistical reporting form. Respondents have to fill out insurance premium in Czech crowns and supplementary information on an insurance rate. The insurance rate is expressed in per mill for each proposed representative. The top four insurance companies are surveyed. There is turnover sample coverage of 65% within CPA 65.12. In such a small number of respondents it is not difficult to achieve a response rate 100%. An overview on a structure of surveyed services, method of data collection, sample methods, number of representatives and number of monthly prices is shown in Table 3.

Table 3 – Characteristics of collection of prices

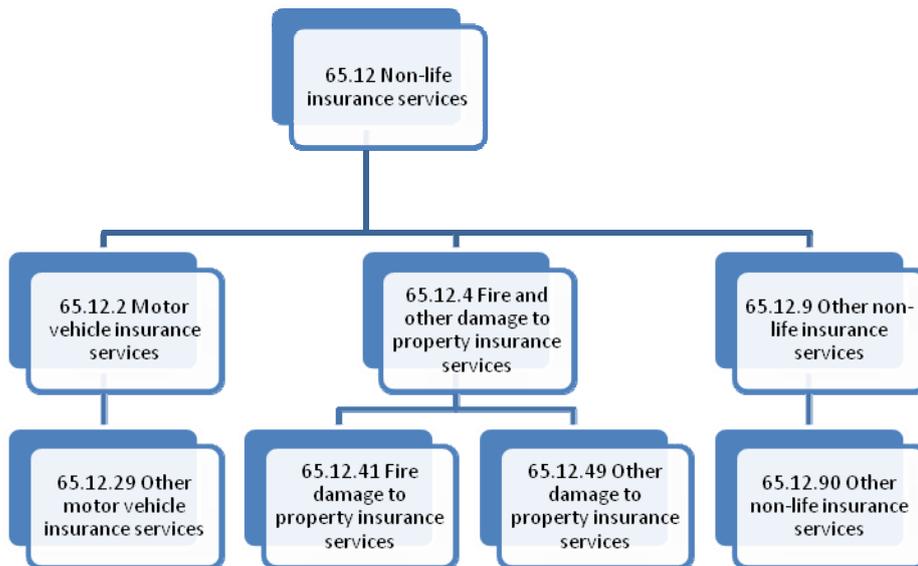
<b>Surveyed services (according to CPA 2008)</b>	<b>Method of data collection</b>	<b>Use</b>	<b>Sample method</b>	<b>The number of representatives and the reported prices</b>
65.12.11 Health insurance services	Monthly statistical survey	CPI	Purposive	2 items – 8 prices
65.12.21 Motor vehicle insurance services, third party liability	Monthly statistical survey	CPI	Purposive	3 items – 12 prices
65.12.29 Other motor vehicle insurance services	Monthly statistical survey	SPPI	Purposive	7 items – 28 prices
65.12.41 Fire damage to property insurance services	Monthly statistical survey	SPPI, CPI	Purposive	12 items – 48 prices
65.12.49 Other damage to property insurance services	Monthly statistical survey	SPPI, CPI	Purposive	12 items – 48 prices
65.12.90 Other non-life insurance services	Monthly statistical survey	SPPI	Purposive	2 items – 8 prices
Household contest insurance	Monthly statistical survey	CPI	Purposive	2 items – 8 prices
Property insurance	Monthly statistical survey	CPI	Purposive	2 items – 8 prices

## 5. Structure and detail of standard classification related to the area

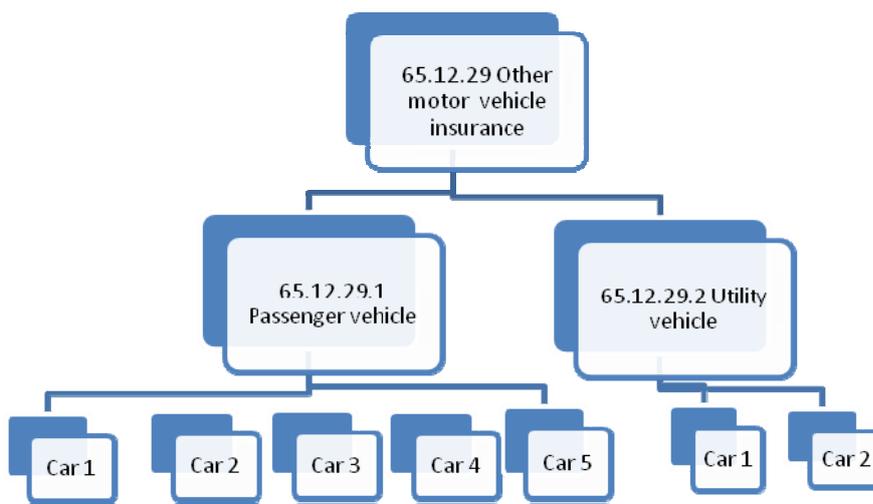
The structure of the Czech standard industrial classification CZ-NACE and the Czech classification of products by activity CZ-CPA is identical to the NACE Rev. 2 at the 4-digit level and the CPA 2008 at 6-digit level, respectively. There is more detailed classification in the Czech Republic. It is mostly used within statistical surveys.

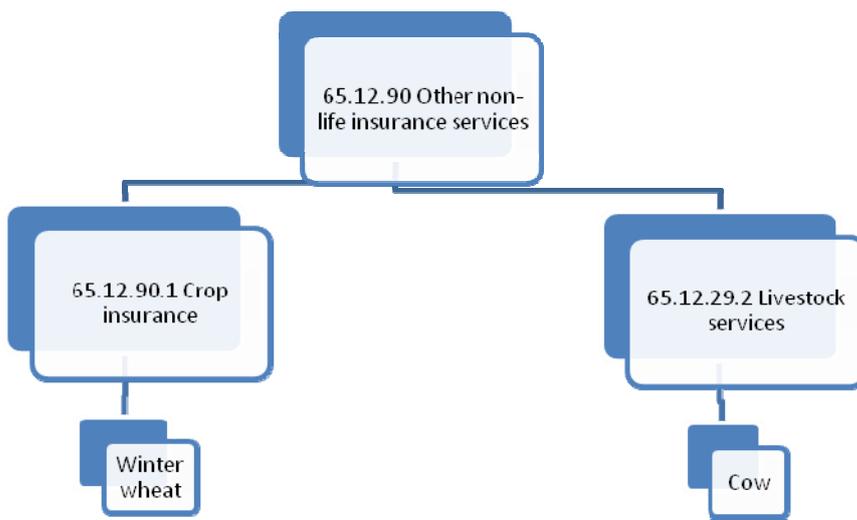
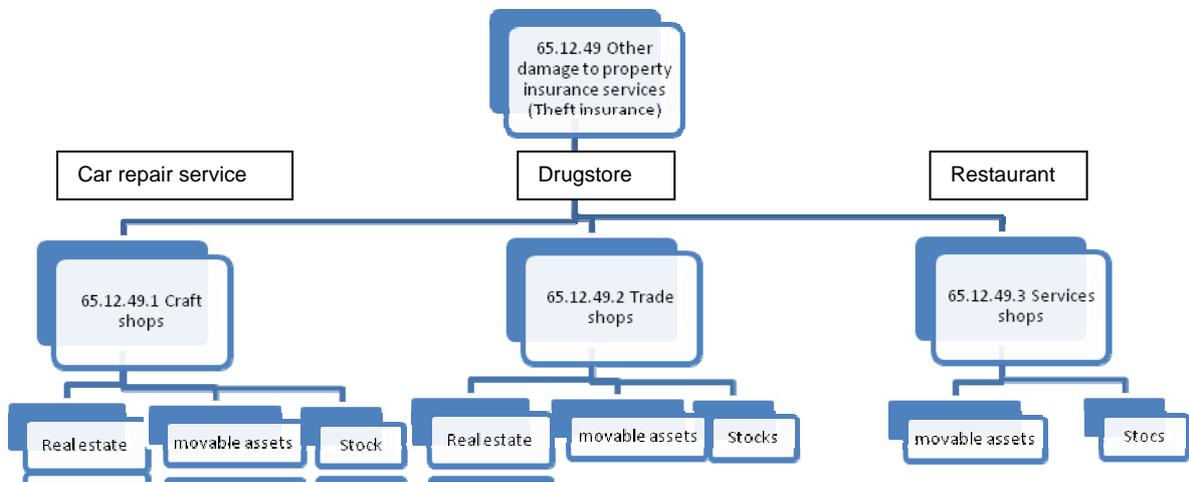
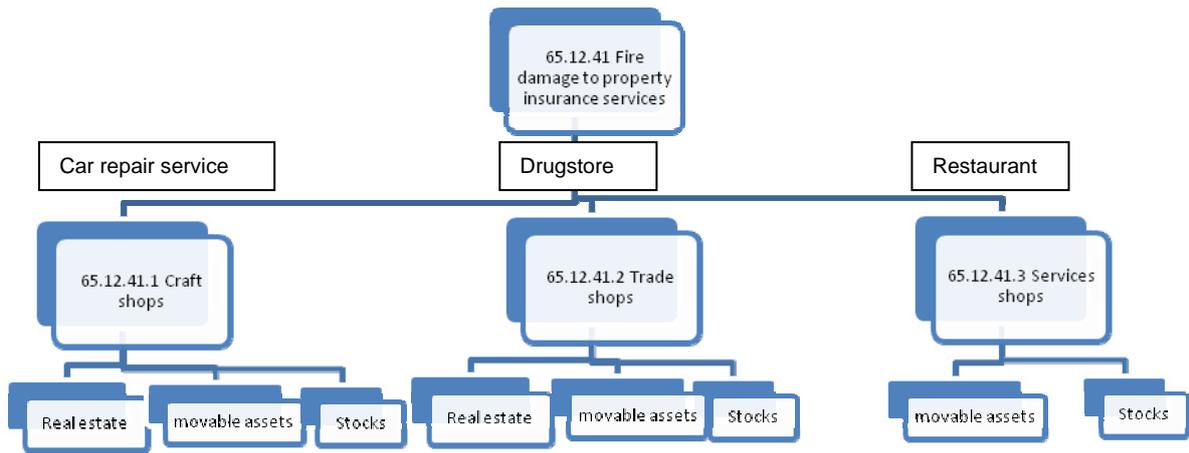
## 6. Evaluation of standard vs. definition and market conditions

In the Czech Republic, the structure of non-life insurance services (B2B price index) is divided into three main types as follows:



Such a classification of insurance segments is not sufficient, hence Price Statistics Sector proposed following more extended structure:





## 7. National accounts concepts

National Accounts use neither the SPPIs nor the CPIs for the insurance sector. Up to now National Accounts has been using an implicit price index for deflation of insurance services. Sources of information are data from the annual company reports and detailed auditing reports. There is a significant difference between the National Accounts Department and Price Statistics Department in terms of way of calculation.

Compilation of national accounts for the sector of insurance services is based on production of insurance companies:

**Production** = *Gross premiums written - Insurance indemnity costs - Change in technical reserves.*

While price statistics is based only on gross premiums written.

This is a reason why price indices for mentioned industry are insufficient for National Accounts.

## 8. Pricing method(s) and criteria for choosing various pricing methods

The price for providing insurance services is called insurance premium. It is remuneration for provided insurance protection, payment for shifting of the negative financial results of contingency from policyholder to insurer. Amount of insurance premium (current or single) depends on level of risk.

Gross premium consists of three components: operating expenses (running of insurance policies and company, liquidation of indemnity), calculated profit and net premium (expenses for indemnity including reserve production).

GP = OE + P + NP, where OE..... operating expenses

P.....calculated profit

NP.....net premium

The most often used rating principle is differential net premium, which is determined by specific factors called tariff variables (age, occupation of the insured, property size, etc.). Tariff classes (homogeneous group of insurance contracts for which the insured risk is approximately the same) are created with the help of tariff variables. Consecutive differentiation of the premium using bonuses (premium discounts) or maluses (surcharge to premium) occurs in some cases.

The next part of chapter will be focused only on groups of insurance services that are monitored in the Czech statistical office.

Among pricing methods which are used to survey prices in insurance sector belongs a method using model pricing and direct use of prices of repeated services.

This pricing method has characteristics of both alternatives. Fictitious models are designed to suit all respondents and are also based on the most commonly offered insurance. The disadvantage is that the topicality of selected models must be watched.

### A. Accident insurance (natural persons only)

In accident insurance has been selected type of insurance specializing in insurance benefits for necessary treatment.

During the reporting of the prices the following basic parameters are taken into account (note that there are 2 representatives by each parameter):

- Age of the insured (40 years and 1 year)
- Insurance period (30-45 years and 14-17 years)
- Risk group (2nd grade and 1st grade)
- Sum insured in case of accidental death (€ 8 000 and € 800)
- Sum insured in case of permanent disability with a progressive benefit (€ 8 000)

#### **B. Household contents insurance (natural persons only)**

The insurance is a set of household equipment against theft, vandalism and complex element.

During the reporting of the prices the following basic parameters are taken into account (note that there are 2 representatives by each parameter):

- Type of property (flat and family house)
- Number of rooms / space flat (3 rooms + 1 kitchen/75 m<sup>2</sup> and 2 rooms + 1 kitchen/60 m<sup>2</sup>)
- Location (Prague and a small village)
- Level of security (a safety lock)
- Value of insured property (€20 000 and € 18 000)

#### **C. Household insurance (permanently occupied household)**

The subject is insurance against a complex element.

During the reporting of the prices the following basic parameters are taken into account (note that there are 2 representatives by each parameter):

- Location (Prague and a small village)
- Sum insured (€ 184,000 and € 112 000)
- Character of building (first class design and standard design)
- Age of building (10 and 5 years)
- Area (out of flood area)

#### **D. Motor damage insurance (natural persons and entrepreneurs)**

The subject is insurance against risks of accident, theft and natural disaster to the full amount of the car value.

During the reporting of the prices the following basic parameters are taken into account (note that there are 10 representatives by each parameter):

- Vehicle type (passenger vehicle and utility vehicle)
- Age of the vehicle (only new cars)
- Model of the given type of vehicle (the cheapest model in the basic equipment)
- Complicity (5%)

Change of the premium amount is considered as the price change. Prices exclude VAT. There are not included any surcharges or discounts in the premium amount.

The price change can be caused by a change in insurance rates (expressed in per mile) or change in the premium amount (an acquisition price of the vehicle declared by the manufacturer).

## **E. Property insurance from the sphere of small and medium risks (entrepreneurs only)**

### *E1. Fire insurance*

During the reporting of the prices the following basic parameters are taken into account (note that there are 3 representatives for every parameter):

- Field (car repair service, restaurant, drugstore)
- Size of the city (medium size)
- Specification of the object (number of floors, floor height, capacity of the building, the character of the perimeter walls, ceilings, roof truss, etc.)
- Value of the building itself and its own movable assets and stocks
- Complicity (€200)
- Number of employees
- Annual income of the company

The insurance is contracted for a new price (the purchasing price of new things). Total premium for the selected craft's area includes separately premium for building itself, movable assets and inventories.

### *E2. Theft or robbery insurance*

During the reporting of the prices the following basic parameters are taken into account (note that there are 3 representatives for every parameter):

- Field (car repair service, restaurant, drugstore)
- Level of security
- Complicity (€200 on movable assets and stocks)

## **F. Agriculture insurance**

### *F1. Crop insurance against hail*

During the reporting of the prices the following basic parameters are taken into account:

- Type of commodities (winter wheat)
- Yield of commodities (5t/ha)
- Complicity (10%)

### *F2. Animal insurance against the risk of infection*

During the reporting of the prices the following basic parameters are taken into account:

- Type of animal (cow - Czech Pied cattle)
- productivity (6000 L / year)
- Complicity (10%)

## **G. Motor third-party liability insurance (natural persons only)**

This insurance is mandatory. Minimal amount limits for personal injury or death are inscribed in the Act.

## **9. Quality adjustment methodologies**

Constant contracts and consequential constant quality over time is common practice in the insurance services (principle of model case of representative). The quality of the individual service is determined by the price parameters described in chapter 8. Proposed models are

mostly set down for longer time period (few months, years). When insurance subject is changed to the new one (e.g. car 'Škoda Fabia 1.2' to car 'Škoda Fabia 1.4') the quality adjustment methodologies are needed. The change of representative is then obligatory for all respondents. Comparing the new insurance premium to the old one the expert of the responding company is asked for the percentage rate of change (expert estimate). Otherwise, no price changed method is used for linking time series of new price representative.

## **10. Evaluation and comparability with turnover/output measures**

### ***Compilation of turnover and output in the short-term business statistics***

Turnover data for insurance services is not surveyed in the frame of short-term statistics.

### ***Compilation of turnover by product***

Currently the Structural Business Statistics of the CSO collect turnover data on insurance services at service product level, namely accident and health insurance services, motor vehicle insurance services, marine, aviation and other transport insurance services, fire and other damage to property insurance services, general liability insurance services, credit and surety ship insurance services, travelling and assistance, legal expenses and miscellaneous financial loss instance services and other non-life insurance services.

## **11. Summary**

- Czech statistical office has been developing the SPPI for insurance services (B2B index) since 1994. The CPI for insurance services has been already calculated since 1991.
- Premiums are mostly written as standard list tariffs and are surveyed monthly by the top four insurance companies.
- In insurance services the pricing method used is a combination of model pricing/direct use of prices of repeated services. For this purpose model cases are formulated (the most commonly provided) whose premiums are actual transaction prices which can repeatedly be observed.
- Insurance services have been divided into three B2B insurance services: Motor vehicle insurance services, Fire and other damage to property insurance services (fire and theft insurance) and Other non-life insurance services (crop and livestock insurance).
- The aggregated index is calculated as a Laspeyres type
- Representative services have been selected in close cooperation with Czech insurance association and/or respondents themselves.