

Inflation of Insurance Damages Through Damages Paid by Insurance Companies in Albania

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Abstract. *The insurance sector as an industry plays a very important role in the economy and development of the non-financial market of developing countries, such as the case of Albania. Such a development of the insurance market in relation to other non-banking financial markets has been noticed not only in Albania but also in most other European countries due to the nature and dynamics that characterize this market. This market, which offers products and services to both individuals and businesses, includes only private companies as the only state-owned company was privatized in 2016. The development of the insurance market has been long, complex and delayed compared to other countries. This is also the reason that this sector in Albania occupies a relatively low weight in the Albanian financial system. The main role of the insurance company is to act as a risk transfer mechanism and to protect the insured from the risks provided in the insurance policy, which may be material or physical. Insurance compensates the insured for property claims, for permanent or temporary bodily injuries, and for this reason, the reserve for future claims must be estimated as accurately as possible by taking into consideration the claim inflation, which in Albania is almost impossible to evaluate due to the lack of data and the application of different models for its evaluation.*

Keywords: Average Claim Method; Consumer Price Index; Claim Inflation; Claim Triangle; Insurance; Reservation.

JEL Codes: G2, G21

Introduction

Claims inflation is one of the key assumptions used by non-life actuaries. An estimate of the claims inflation rate is needed in almost all areas where non-life actuaries are involved, including reserving, pricing, capital planning and modelling (Booth, P., Chadburn, et al 2020). For reserving, understanding historical claims inflation rates is of primary importance, while for capital planning and modelling, the actuary must forecast expected future rates.

For pricing, both past and future rates are needed to put past years on a comparable basis with the current year and the latter to project results into the next year. Unfortunately, claims inflation is very difficult to measure with a degree of certainty (Paldynski, H. 2015). It is difficult to accurately assess the progress of the level of inflation of claims in the past years.

This is due to the fact that there are numerous other factors can skew claims statistics, including shifts in the business environment, adjustments to policy terms, deductibles, and limits, as well as adjustments to settlement trends. Furthermore, estimating the future level of claims inflation is considerably more challenging than quantifying previous inflation rates (Liljestrand, J., & Nyberg, F., 2023).

This is because claims data is skewed by many other factors such as changes in the business climate, changes in policy limits, deductibles and policy terms, and changes in settlement patterns. And, as difficult as it is to put numbers on past inflation rates, it is even more difficult to estimate the future level of claims

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inflation. Although, opportunities from online innovators, mobile phone manufacturers, and a variety of non-banking businesses are the next challenges (Ilollari, et.al., 2022).

The purpose of this paper is to analyse how insurance claims evolve, considering the inflation factor and its impact on the reserve. The study of claims inflation and its calculation will enable insurance companies to have adequate reserves as well as a more accurate estimate of expenses and premiums for future years.

Providing a comprehensive conceptual framework regarding claims inflation and its impact on insurance company reserves. Reviewing the factors in the size and frequency of claims as well as the methods used for estimating claims inflation will present a complete overview of the possibility of estimating claims inflation and its use in reserving methods. This study seeks to answer the question: Can the inflation of insurance claims be estimated by taking into consideration the claims paid by insurance companies in Albania?

1. Economic inflation, claims inflation and their importance

What exactly is claims inflation and how does it affect non-life insurance liabilities?

To assess and understand claims inflation, one must first define economic inflation, which can be defined as a sustained increase in the general price levels of goods and services in an economy over a period of time. More briefly, by inflation, we will understand the continuous increase in the general level of prices. Inflation is usually measured by monitoring the price of an average basket of goods and services over time (Partachi, I., & Motelica, V. 2015).

Both non-life and life insurance are badly impacted by inflation. This is typically caused by the inability to accurately estimate technical reserves, the difficulty in forecasting future performance, and the declining outlook for the presentation of financial assets in insurance portfolios. By raising the percentage of mandatory insurance, rising inflation has an impact on the insurance market's structure (Prodanov, et al., 2022).

The Harmonized Index of Consumer Prices is used to calculate inflation for the entire euro area (HICP). This index is infamous for being disturbed by significant price variability in specific goods, but it correctly captures changes in the average price of the complete household consumption basket. Thus, one must also keep an eye on core inflation, which is more stable. According to Lalliard, A., & Robert, P. A. (2022), this is often assessed in the euro area as the change in prices excluding energy and food.

This is the consumer price index which is also used in Albania by the Institute of Statistics to estimate economic inflation (INSAT). In general, inflation is divided into three categories:

1. Moderate inflation which expresses the slow increase in the general level of prices and this stage of inflation is low, usually 2% to 3%
2. Galloping inflation which is characterized by high price levels and in the situation of galloping inflation, rates are 2 digits (13-16%).
3. Hyperinflation. In the hyperinflation phase, every economic process is deregulated and this type of inflation is deadly for the economy. However, hyperinflation is a very rare phenomenon and can only happen in the case of war.

But we need to understand how 'ordinary' inflation relates to claims inflation. What is the basket of goods and services in the context of insurance? Insurers sell the promise to pay the insured an indemnity or benefit after an event of a loss caused by the insured perils, subject to any limitations, for a premium received in advance as agreed upon in the insurance policy. Therefore, the products sold by an insurer are the

future claims payments and the basket of goods and services is determined by the insurance contracts, the terms describing the policies and the expected costs of the claims.

As with ordinary inflation, where the cost of the basket is derived from the items purchased, in the insurance context the items purchased are the frequency and severity of claims.

So, claims inflation is the change in the level of the expected cost of claims for an insurance policy in an economy over time (Ahlgrim, K. C., & D'Arcy, S. P. 2012).

The cost of claims is subject to limitations by the wording of the policy. As evidenced above, the basket of goods and services in the insurance context are the policy terms that describe the indemnity or benefits, the deductible and limits, the risks or exposures insured and the risks covered.

Accurately estimating claims inflation is important for several reasons:

- Sufficiency of reserves in the financial statements;
- Business strategy: the risk of under-reserving and underpricing of products;
- Premiums and expenses in the coming years;
- Effective management of requests;
- More accurate price estimation;
- Cost reduction and increased profitability;
- Long-term stability.

Economic inflation can be easily calculated if the basket of goods and services does not change (Tobin, J. 1978). But we live in a world that changes every day and new products are developed and others are no longer used. So, the calculation of economic inflation becomes difficult and needs frequent adjustment. Also, different sectors have faced several obstacles as a result of the pandemic situations and emergencies, such as lower demand, supply chain interruptions, and operational constraints brought on by lockdowns and social distancing efforts (Ilollari, et.al 2024).

Similarly, insurance contracts change over time when customers require changes to deductibles, include or exclude certain risks, or make changes to the underlying exposure, and in all those cases considerations should be given to how they will be valued. Customers know their products and characteristics, but they should be more convincing and persistent in improving their marketing skills (Ilollari et.al.,2022).

In the case of claims inflation, it is important to consider the frequency and magnitude of claims separately (Hong, L., & Mommaerts, C. 2024).

Total claims inflation is clearly a combination of trends in frequency and severity, but very different factors drive trends in these two elements. Consequently, only by analyzing them in isolation from each other can one fully understand what affects claims inflation. So many aspects make it difficult to estimate an accurate level of claims inflation.

2. Methodology

A claims reserve is a reserve of money set aside by an insurance company to pay liabilities that have arisen or are expected to arise from insurance policies.

The claims reserve is the sum between the reported and unsettled claims RBNS (Reports But not Settled) and the incurred but not reported Incurred But Reported (IBNR) claims. An insurance company will set a

claim reserve for each file by reflecting its best estimate of the eventual settlement amount (Reid, D. H. 1978), (Raeva et.al., 2021).

This study will rely on the use of a well-known reserving methodology (the average claims method) to measure the amount of inflation that would produce the least variance in the claim's triangles. This method (Amir Ahmad Dar & Sai Varshini 2017), considers two key elements which are the number of claims and the average value of claims.

This method consists of developing triangles for the total value of claims as well as for the number of claims. By dividing the data into the two triangles formed, a third triangle will be created that reflects the average value of the claims and then the claims will be projected using the development factors and thus the reserve will be calculated. This methodology will be based on numerical methods. After constructing the triangles and estimating the claims inflation generated from the data, the result will be compared to the consumer price index to get an idea of how these two inflations differ from each other. For the model, claims were selected from a Motor Third Part Liability (MTPL) portfolio for the period *July 2016 to December 2020*.

MTPL portfolio was selected due to several considerations:

First: This has historically been and still remains the most important portfolio for Albanian non-life insurers both in the volume of premiums and in its contribution to gross profitability.

Secondly: and partly as a result of the first consideration, the volume of data available from such a portfolio is much higher than the similar volume of other products, giving more credibility to our calculations.

3. Analysis

For MTPL's portfolio, data on claims were collected from July 2016 to December 2020.

They are divided into 2 groups; a). date of accident and b). date of settlement.

For each of the claims, the amount is attached. The data were collected and grouped, and the average claim triangle was constructed (triangle of paid claims/triangle of the number of claims):

Table 1 Average claim triangle (triangle of paid claims/triangle of number of claims)

average claim		+1 year				+2 years				+3 years				+4 years				+5 years	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2016	1																		
	2																		
	3	25,000	73,813	73,813	73,813	73,813	73,813	73,813	73,813	73,813	73,813	73,813	73,813	73,813	73,813	73,813	73,813	73,813	73,813
	4	59,063	78,075	82,913	128,025	128,025	126,096	126,096	126,096	126,096	126,096	126,096	126,096	126,096	126,096	126,096	126,096	126,096	126,096
2017	5	98,336	110,056	106,980	156,550	155,948	183,201	183,201	183,201	212,597	212,597	212,597	212,597	212,597	212,597	212,597	212,597	212,597	212,597
	6	64,956	67,258	68,809	77,060	100,645	132,093	132,093	136,628	136,628	136,628	136,628	136,628	136,628	136,628	136,628	136,628	136,628	136,628
	7	79,944	80,860	90,872	90,584	94,308	101,893	101,893	122,955	122,955	122,955	139,463	146,473	146,473	150,492	150,492	150,492	150,492	150,492
	8	73,327	73,491	90,592	90,592	93,321	95,014	95,167	95,167	95,167	95,167	95,167	109,179	112,754	113,406	113,406	113,406	113,406	113,406
2018	9	74,066	71,137	76,831	89,943	108,314	108,314	107,901	107,188	123,063	123,063	123,063	123,063	123,610	124,324	124,324	124,324	124,324	124,324
	10	75,489	86,010	82,416	100,170	102,616	102,616	102,616	116,995	137,006	137,006	137,006	140,182	140,805	141,619	141,619	141,619	141,619	141,619
	11	134,890	119,220	139,043	136,502	132,839	136,736	136,736	136,736	141,090	141,090	143,358	146,681	147,332	148,184	148,184	148,184	148,184	148,184
	12	105,426	86,259	82,788	81,612	80,921	117,076	117,076	131,580	152,941	152,941	155,399	159,001	159,708	160,631	160,631	160,631	160,631	160,631
2019	13	54,263	65,583	64,132	65,786	64,523	64,523	64,523	100,184	107,594	107,594	109,322	111,857	112,354	113,003	113,003	113,003	113,003	113,003
	14	171,305	117,531	106,614	105,468	104,556	119,965	126,962	136,110	146,177	146,177	148,526	151,969	152,644	153,526	153,526	153,526	153,526	153,526
	15	86,763	69,242	68,685	67,815	82,498	87,889	88,324	94,688	101,691	101,691	103,325	105,721	106,190	106,804	106,804	106,804	106,804	106,804
	16	106,772	93,803	94,715	96,393	117,942	129,260	129,900	139,260	149,560	149,560	151,963	155,486	156,177	157,079	157,079	157,079	157,079	157,079
2020	17	94,995	81,368	79,094	96,481	102,152	111,955	112,509	120,616	129,537	129,537	131,618	134,669	135,268	136,049	136,049	136,049	136,049	136,049
	18	100,505	118,753	116,497	129,720	137,344	150,525	151,270	162,170	174,164	174,164	176,962	181,065	181,869	182,920	182,920	182,920	182,920	182,920
	19	77,864	74,904	76,644	85,343	90,359	99,031	99,521	106,692	114,583	114,583	116,424	119,123	119,652	120,344	120,344	120,344	120,344	120,344
	20	85,028	84,133	86,087	95,858	101,492	111,232	111,783	119,837	128,701	128,701	130,769	133,800	134,395	135,171	135,171	135,171	135,171	135,171

(Source: Authors)

This triangle is then fully developed according to the chain ladder method (weighting the factors according to the average size of the claim). Up to this point, this is a standard average claim reserving method. We assume that claims inflation does not exist and that all similar claims will always be settled for the same amount regardless of the date of the accident. Thus, we would expect all claims of a similar nature to cluster close to the average, exhibiting a low standard deviation. So, by taking the average for each column (representing a certain lag period), we at least separate claims that are supposed to have the same characteristics.

We then calculate the difference between each triangle cell and its corresponding average by constructing the error triangle:

Table 2 Error Triangle

Error		+1 year				+2 years				+3 years				+4 years				+5 years	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2016	1																		
	2																		
	3	(62,111)	(12,382)	(14,383)	(24,394)	(30,166)	(40,145)	(40,709)	(48,961)	(58,041)	(58,041)	(60,160)	(63,265)	(63,874)	(64,670)	(64,670)	(64,670)	(64,670)	(64,670)
	4	(28,048)	(8,119)	(5,282)	29,819	24,046	12,139	11,575	3,323	(5,757)	(5,757)	(7,876)	(10,982)	(11,591)	(12,386)	(12,386)	(12,386)	(12,386)	(12,386)
2017	5	11,225	23,862	18,784	58,344	51,969	69,243	68,679	60,428	80,743	80,743	78,625	75,519	74,910	74,115	74,115	74,115	74,115	74,115
	6	(22,155)	(18,936)	(19,387)	(21,146)	(3,333)	18,135	17,571	13,855	4,775	4,775	2,656	(450)	(1,059)	(1,854)	(1,854)	(1,854)	(1,854)	(1,854)
	7	(7,166)	(5,334)	2,676	(7,622)	(9,671)	(12,064)	(12,628)	182	(8,898)	(8,898)	5,491	9,395	8,786	12,010	12,010	12,010	12,010	12,010
	8	(13,784)	(12,703)	2,396	(7,614)	(10,657)	(18,943)	(19,354)	(27,606)	(36,686)	(36,686)	(38,805)	(27,899)	(24,933)	(25,077)	(25,077)	(25,077)	(25,077)	(25,077)
2018	9	(13,045)	(15,057)	(11,365)	(8,264)	4,335	(5,644)	(6,620)	(15,585)	(8,791)	(8,791)	(10,909)	(14,015)	(14,077)	(14,159)	(14,159)	(14,159)	(14,159)	(14,159)
	10	(11,622)	(184)	(5,780)	1,964	(1,362)	(11,341)	(11,905)	(5,778)	5,153	5,153	3,034	3,104	3,118	3,136	3,136	3,136	3,136	3,136
	11	47,780	33,026	50,847	38,295	28,880	22,778	22,214	13,963	9,237	9,237	9,385	9,603	9,645	9,701	9,701	9,701	9,701	9,701
	12	18,315	65	(5,408)	(16,594)	(23,057)	3,118	2,554	8,807	21,088	21,088	21,427	21,923	22,021	22,148	22,148	22,148	22,148	22,148
2019	13	(32,848)	(20,612)	(24,064)	(32,420)	(39,455)	(49,434)	(49,998)	(22,589)	(24,260)	(24,260)	(24,650)	(25,221)	(25,333)	(25,480)	(25,480)	(25,480)	(25,480)	(25,480)
	14	84,194	31,337	18,418	7,261	577	6,008	12,441	13,337	14,323	14,323	14,553	14,891	14,957	15,043	15,043	15,043	15,043	15,043
	15	(347)	(16,952)	(19,511)	(30,391)	(21,481)	(26,068)	(26,197)	(28,085)	(30,162)	(30,162)	(30,647)	(31,357)	(31,497)	(31,679)	(31,679)	(31,679)	(31,679)	(31,679)
	16	19,662	7,609	6,520	(1,813)	13,963	15,303	15,379	16,487	17,706	17,706	17,991	18,408	18,490	18,596	18,596	18,596	18,596	18,596
2020	17	7,884	(4,826)	(9,102)	(1,726)	(1,827)	(2,002)	(2,012)	(2,157)	(2,317)	(2,317)	(2,354)	(2,409)	(2,419)	(2,433)	(2,433)	(2,433)	(2,433)	(2,433)
	18	13,394	32,559	28,301	31,513	33,366	36,568	36,749	39,397	42,310	42,310	42,990	43,987	44,182	44,437	44,437	44,437	44,437	44,437
	19	(9,247)	(11,290)	(11,552)	(12,863)	(13,619)	(14,926)	(15,000)	(16,081)	(17,270)	(17,270)	(17,548)	(17,955)	(18,035)	(18,139)	(18,139)	(18,139)	(18,139)	(18,139)
	20	(2,083)	(2,061)	(2,109)	(2,348)	(2,486)	(2,725)	(2,738)	(2,936)	(3,153)	(3,153)	(3,204)	(3,278)	(3,292)	(3,311)	(3,311)	(3,311)	(3,311)	(3,311)

(Source: Authors)

This triangle is calculated as the difference between each triangle cell and its respective average and is used to measure the goodness-of-fit of our very simple model (that claims for the same delay period should cluster around the average). This pattern indicates whether the sample data represents the data we would expect to find in the actual population.

To calculate "Goodness of Fit" we will use the "Least Squares Method", such as 1-D/O, where D stands for the sum of the squares of the detailed errors in the error triangle, and O stands for the sum of the squares of the average triangle of claims detailed in Table 1. At this point, this equals 95.19%, a surprisingly good result for a variable portfolio like MTPL (Du, H., & Bentler, P. M. (2022)).

To make the model more complete we will include inflation where for each claim the "distance from the beginning" will be calculated, i.e. the number of years that have passed since the payment until December 31, 2020.

Indexing is compounded and takes the form of $P \cdot (1+i)^d$

where,

P is the amount of the payment,

i is our measure of inflation, and

d is the distance from the beginning, measured in years.

Now we need to find the inflation rate that maximizes the fit of the model, that is, the value that minimizes the size of the average claim group of the same lag period. We will use MX Excel's Solver, a tool for finding numerical solutions to complex formulas. The model gives an unexpected value of -0.1%, with almost no claim inflation during the period from July 2016 to December 2020.

Since we have a non-normal value perhaps more could be done to separate the claims of the different characteristics. We thus address the effect of abnormally large claims in our data set, defined as claims large enough to affect the results and yet rare enough not to be evenly distributed across different accident dates.

Returning to the database, we choose (judgmentally) cut-off points of 1.8 million ALL (before indexing) and remove from the triangle all claims equal to or above this amount. Only 10 claims out of a total of 1,624 were found, which happened to be relatively early, indicating that our first measurement of inflation was an underestimate.

Thus, the triangle of average claims and the triangle of error excluding large claims are as follows:

Table 3 Average claim triangle without large claim.

average claim		+1 year				+2 years				+3 years				+4 years				+5 years	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2016	1																		
	2																		
	3	27,815	81,853	81,853	81,853	81,853	81,853	81,853	81,853	81,853	81,853	81,853	81,853	81,853	81,853	81,853	81,853	81,853	81,853
	4	65,483	86,364	91,607	140,726	140,726	138,464	138,464	138,464	138,464	138,464	138,464	138,464	138,464	138,464	138,464	138,464	138,464	138,464
2017	5	108,229	120,930	117,526	118,181	121,454	152,719	152,719	152,719	152,719	152,719	152,719	152,719	152,719	152,719	152,719	152,719	152,719	152,719
	6	71,043	73,444	75,072	83,884	85,089	85,089	90,639	90,639	90,639	90,639	90,639	90,639	90,639	90,639	90,639	90,639	90,639	90,639
	7	86,883	87,663	98,327	97,988	101,928	109,887	109,887	131,807	131,807	131,807	146,596	155,687	155,687	159,582	159,582	159,582	159,582	159,582
	8	79,233	79,171	97,362	97,362	100,191	101,891	102,029	102,029	102,029	102,029	102,029	102,029	105,709	106,374	106,374	106,374	106,374	106,374
2018	9	79,427	76,134	82,128	95,933	95,933	95,933	95,672	95,090	111,789	111,789	111,789	111,789	112,359	113,066	113,066	113,066	113,066	113,066
	10	80,510	91,515	87,622	106,212	108,748	108,748	108,748	123,451	143,656	143,656	143,656	144,889	145,628	146,544	146,544	146,544	146,544	146,544
	11	143,123	125,954	146,554	143,864	139,980	143,834	143,834	143,834	148,059	148,059	150,668	151,961	152,736	153,697	153,697	153,697	153,697	153,697
	12	111,039	90,623	86,923	85,649	84,909	84,310	84,310	99,852	122,194	122,194	124,346	125,414	126,053	126,846	126,846	126,846	126,846	126,846
2019	13	56,814	68,406	66,792	68,452	67,126	67,126	67,126	85,325	89,995	89,995	91,580	92,366	92,837	93,421	93,421	93,421	93,421	93,421
	14	178,181	93,085	89,221	88,438	87,690	104,211	111,735	118,931	125,440	125,440	127,650	128,745	129,402	130,216	130,216	130,216	130,216	130,216
	15	89,680	71,336	70,695	69,783	84,583	89,942	90,465	96,291	101,561	101,561	103,350	104,237	104,769	105,428	105,428	105,428	105,428	105,428
	16	109,709	96,074	96,908	98,564	120,114	126,008	126,740	134,902	142,285	142,285	144,792	146,034	146,779	147,703	147,703	147,703	147,703	147,703
2020	17	97,022	82,859	80,484	97,815	100,901	105,852	106,467	113,323	119,525	119,525	121,631	122,675	123,301	124,077	124,077	124,077	124,077	124,077
	18	101,941	119,945	117,592	126,665	130,661	137,072	137,868	146,747	154,779	154,779	157,506	158,857	159,668	160,672	160,672	160,672	160,672	160,672
	19	78,525	75,226	77,376	83,346	85,975	90,193	90,717	96,559	101,844	101,844	103,638	104,528	105,061	105,722	105,722	105,722	105,722	105,722
	20	85,172	82,773	85,139	91,708	94,601	99,242	99,819	106,247	112,062	112,062	114,036	115,015	115,602	116,329	116,329	116,329	116,329	116,329

(Source: Authors)

Table 4 Error triangle without large claims

Error		+1year				+2years				+3years				+4years				+5years	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
2016	1																		
	2																		
	3	(63,842)	(7,222)	(9,768)	(16,837)	(19,950)	(24,945)	(25,565)	(32,483)	(38,741)	(38,741)	(40,866)	(41,919)	(42,550)	(43,333)	(43,333)	(43,333)	(43,333)	(43,333)
	4	(26,174)	(2,711)	(15)	42,036	38,923	31,665	31,045	24,127	17,870	17,870	15,745	14,691	14,060	13,278	13,278	13,278	13,278	13,278
2017	5	16,572	31,854	25,905	19,491	19,650	45,920	45,300	38,382	32,124	32,124	30,000	28,946	28,315	27,533	27,533	27,533	27,533	27,533
	6	(20,614)	(15,631)	(16,549)	(14,807)	(16,714)	(21,709)	(22,330)	(23,698)	(29,955)	(29,955)	(32,080)	(33,133)	(33,765)	(34,547)	(34,547)	(34,547)	(34,547)	(34,547)
	7	(4,774)	(1,412)	6,706	(702)	124	3,088	2,468	17,470	11,212	11,212	25,877	31,914	31,283	34,396	34,396	34,396	34,396	34,396
	8	(12,425)	(9,904)	5,740	(1,329)	(1,612)	(4,908)	(5,390)	(12,308)	(18,565)	(18,565)	(20,690)	(21,743)	(18,695)	(18,812)	(18,812)	(18,812)	(18,812)	(18,812)
2018	9	(12,230)	(12,941)	(9,493)	(2,757)	(5,870)	(10,865)	(11,747)	(19,247)	(8,805)	(8,805)	(10,930)	(11,983)	(12,045)	(12,120)	(12,120)	(12,120)	(12,120)	(12,120)
	10	(11,147)	2,440	(3,999)	7,522	6,944	1,949	1,329	9,114	23,061	23,061	20,937	21,117	21,224	21,358	21,358	21,358	21,358	21,358
	11	51,466	36,879	54,933	45,174	38,177	37,035	36,415	29,497	27,465	27,465	27,949	28,189	28,333	28,511	28,511	28,511	28,511	28,511
	12	19,382	1,548	(4,698)	(13,041)	(16,894)	(22,489)	(23,109)	(14,485)	1,599	1,599	1,627	1,641	1,650	1,660	1,660	1,660	1,660	1,660
2019	13	(34,843)	(20,569)	(24,829)	(30,238)	(34,678)	(39,673)	(40,293)	(29,012)	(30,600)	(30,600)	(31,139)	(31,406)	(31,566)	(31,765)	(31,765)	(31,765)	(31,765)	(31,765)
	14	86,524	4,010	(2,400)	(10,252)	(14,114)	(2,588)	4,316	4,594	4,845	4,845	4,931	4,973	4,998	5,030	5,030	5,030	5,030	5,030
	15	(1,977)	(17,739)	(20,926)	(28,907)	(17,221)	(16,856)	(16,954)	(18,046)	(19,033)	(19,033)	(19,369)	(19,535)	(19,635)	(19,758)	(19,758)	(19,758)	(19,758)	(19,758)
	16	18,052	6,999	5,287	(126)	18,311	19,209	19,321	20,565	21,690	21,690	22,073	22,262	22,376	22,516	22,516	22,516	22,516	22,516
2020	17	5,365	(6,216)	(11,137)	(875)	(902)	(947)	(952)	(1,013)	(1,069)	(1,069)	(1,088)	(1,097)	(1,103)	(1,110)	(1,110)	(1,110)	(1,110)	(1,110)
	18	10,283	30,869	25,971	27,975	28,858	30,274	30,449	32,410	34,184	34,184	34,786	35,085	35,264	35,486	35,486	35,486	35,486	35,486
	19	(13,132)	(13,850)	(14,246)	(15,345)	(15,829)	(16,605)	(16,702)	(17,777)	(18,750)	(18,750)	(19,081)	(19,244)	(19,343)	(19,464)	(19,464)	(19,464)	(19,464)	(19,464)
	20	(6,485)	(6,302)	(6,482)	(6,983)	(7,203)	(7,556)	(7,600)	(8,090)	(8,532)	(8,532)	(8,683)	(8,757)	(8,802)	(8,857)	(8,857)	(8,857)	(8,857)	(8,857)

(Source: Authors)

Running Solver again, we find that a measure of 2.5% compounded annual inflation yields a maximum fit of 96.02%, a slight but noticeable improvement. This rate, much more reasonable and consistent with our expectations, is the best approximation that can be achieved with the limited amount of information available.

For the period 2016-2020, the average inflation is approximately 1.76%. So, we have a claim inflation that is 35% higher than price inflation, again a result in line with our expectations as well as the market.

4. Results and Discussions

Using a simple model such as the average cost per claim model and some basic statistics, it is possible to estimate a claim inflation rate, which based on the data used is slightly higher than price inflation. The values calculated by the study are higher than price inflation, which means that claims in our country are affected by more factors than the basket of goods and services. This is a more accurate value compared to price inflation because it has been proven that the severity and frequency of claims are influenced by many factors, which is not the case for the basket of goods and services that are included in the calculation of the Consumer Price Index.

This method used to estimate claim inflation can be used in the future to predict how claims will develop and when building triangles, it can be assumed without performing calculations that claim inflation will be higher than price inflation for the reasons mentioned above. In the euro area price inflation is usually measured as the change in prices excluding energy and food.

Since the study found that inflation has a significant impact on insurance companies claims, the following is recommended:

-The Financial Supervisory Authority (FSA) as well as the insurance companies must coordinate and cooperate to design the necessary framework in order to develop appropriate models and use the data of all actors for the assessment of the claims inflation with the aim of the most accurate reserving and their sufficiency in the financial statements, the effective management of claims as well as the reduction of costs and the increase of profitability. For the development of these models that are currently not applied in the Albanian insurance market, it will probably be necessary to cooperate with reinsurers who are present in our market as they have the necessary experience and expertise to assist all actors in the construction, development and application of claims inflation assessment models.

- The Institute of Statistics can be an important actor in the development of a model to calculate claims inflation, possibly by cooperating with the FSA and with insurance companies or by cooperating with sister international institutions that can provide the necessary assistance for the development of claim inflation assessment models.

- Since the study concludes that inflation generally affects the size of claims, it is recommended that company management should draft policies/instructions and revise policy conditions to minimize the factors that affect claims inflation. So, it is necessary to minimize as much as possible the factors that influence the severity and frequency of claims.

The study also recommends that insurers should remain vigilant in monitoring inflation. Insurers can reduce their exposure to inflation risk through carefully designed terms and the use of reinsurance. The pandemic and other emergencies have presented a number of challenges for countries in the EU, especially an increase in the claims inflation rate for insurance companies. Based in the paper's explained conclusion, insurance businesses in Albania require to consider innovation and technology as major achievements. This might lower the cost for customers and cut costs for insurance companies.

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