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PRICE AND VOLUME MEASUREMENT FOR INSURANCE AND PENSION FUND SERVICES[1]

Submitted by ISTAT, Italy

The meeting is organised jointly with Eurostat and the Organization for Economic Co-operation and Development

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I. INTRODUCTION

1. The purpose of the present work is to provide elements to start a debate on the measurement of volume and price for life insurance services, pension fund services and non-life insurance services. Results of Italy's experience in defining volume estimates within the recent revision of National Accounts are reported in Annex 1 and 2.

2. Insurance corporations are defined as those institutional units which are principally engaged in financial intermediation as the consequence of the pooling or transfer of risks (ESA95,paragraph 2.60). Insurance corporations receive premiums to cover risks; in short they use premiums to:

- make provisions to manage future expected risks (provisions are allocated in "investment grade" assets, defined by the national supervisory authority (ISVAP));
- pay the claims ;
- remunerate their activity.

3. As Insurance companies do not apply any direct fee on premiums earned, the measure of the current output of insurance services has to be derived indirectly as follows (ESA95 , 3.63):

Output of insurance services
=
Total actual premiums earned (+) Total premium supplements (+) Total claims due (-) Change in the actuarial reserves (-)

4. This way of measuring current output makes it difficult to decompose it into its price and volume components. By the way ESA95 and SNA93 define insurance as an activity, but provide no definition of an individual unit of insurance, which could allow a direct procedure to define a volume index .

II. LIFE INSURANCE AND PENSION FUNDS

5. Life insurance include traditional products and more tipically financial products, both characterized by a medium-long run profile. These two types of products have different patterns both for claims and for actuarial reserves.

6. As a consequence, a volume index based on deflated premiums does not reflect the change in the value of output of life insurance.

7. To take account of changes in risks, of general changes in prices resulting from the investment activity and of unexpected claims, the *Handbook on price and volume measures in National Accounts (*from now on *Handbook)*, published by Eurostat, proposes a volume index [2] based on the level of provisions adjusted for claims deflated by the GDP deflator. The *Handbook*

underlines besides, in § 4.9.2, that "...*changes in the level of provisions resulting from investment and unexpected claims can be seen as price changes and should be excluded from volume measures.*"

8. The results of the application of such a methodology to Italy' insurance output volume measure for the years 1993-2004[3] are reported in Annex 1 (*Method Handbook*).

9. The deflation methodology suggested by the *Handbook* leads to relevant biases in the variation of insurance output at previous year prices : as a matter of fact GDP deflator isn't able to eliminate the effect of price component included in the changes of provisions and of claims. Therefore the volume index results overestimated, by contrast to what reported in paragraph 4.9.2 of *Handbook*. The deflator appears poorly suitable.

10. As a second option, we tried to use the number of policies , which the *Handbook* considers a C method for life insurance and pension funds. The number of policies looks to be the only variable we dispose of that is able to incorporate at the same time the changes in volume originating from the trend of premiums, claims and provisions.

11. The best method would be to use the number of policies by kind, weighted by the corresponding principals but, unfortunately, due to a change in the data collection by the supervisory authority, in line with EU Accounting Directive, we only dispose of such data up to 1997. As a consequence we decided to try to consider directly the total number of existing policies at the end of each year. We applied both methodologies for the period up to 1997: it resulted that the two indices were very close each other . So we adopted the "total policies" method for the whole series (*Method Number of policies*).

12. In Annex 1 it is possibile to compare the latter method with the one proposed by the *Handbook*. Let's consider the year 2002: current output falls down due to an increase of claims; in this case several contracts (financial products with a medium run) expired but at the same time insurance enterprises weren't able to collect new policies. The expired contracts cannot be considered as unexpected claims, due to their nature: therefore the economic event has to be interpreted as a decrease of the volume component of output, it is as a decrease of risks gathered by insurers.

13. The method suggested by the *Handbook* decomposes the decrease of current output (value index =92.36) into a strong increase of the volume component (equal to 124.62) and consequently in a decrease of the price component (equal to 74.12), which, in this case, looks counterintuitive. On the other side the method based on the number of policies splits the decrease of current output (equal to 92.36) in a decrease both of the volume component (equal to 96.77) and of the price component (equal to 95.44).

14. The last method appears to reflect in a more adequate way the economic situation in the case of an indirect measurement of output of insurance services..

III. NON-LIFE INSURANCE

15. The behaviour of non-life insurance is largely different from that of life insurance because of the short-term profile of transferred risk and of the type of risk; the financial aspect is absent.

16. The *Handbook* recommends as a B method a volume index based on number of policies by product and type of purchaser: unfortunately such data aren't available.

17. OECD *Task Force on financial services*[4] in its final report states that a *"... preferred method to obtain a direct volume measure of the output of non-life insurance services is to extrapolate the current price measure of the base year by the rate of change of a volume index obtained as the deflation of gross premiums earned by a premium price index (PPI or CPI, depending of the context)"*.

18. The results of the application of this method to Italy' non-life insurance output are reported in Annex 2 (*Method Task Force*).

19. Anyway the use of premiums doesn't appear adequate to correctly represent the change in the volume of the insurance service, which has to take into account also the amount of claims.

20. Moreover PPI for insurance products, which we derive from CPI, only represents prices for motor-vehicle policies, and therefore looks not to be adequate to represent the whole range of products provided by non-life insurance corporations.

21. Thus we tried an alternative method, by defining a volume index based on the sum of premiums earned plus claims, deflated by the domestic demand deflator. Results look to be quite satisfactory.

Annex 1.

Life insurance and pension fund: a comparison between the method suggested by the *Handbook on price and volume measures in National Accounts* and the one base on the total number of policies.

Anni	*Annual growth rate*				*Method Handbook*		*Method Number of policies*	
	Output	Provisions	Claims	GDP deflator	Volume index	Price index	Volume index	Price index
1993	**100.72**	124.86	135.01	103.91	120.67	83.47	111.02	90.73
1994	**128.32**	121.79	130.64	103.55	118.10	108.65	112.59	113.97
1995	**120.18**	122.96	122.10	104.97	117.09	102.64	113.82	105.59
1996	**91.35**	121.00	128.69	105.20	115.46	79.12	113.22	80.69
1997	**83.31**	124.36	126.76	102.54	121.42	68.61	103.82	80.24
1998	**169.72**	126.89	123.38	102.59	123.47	137.46	103.54	163.92
1999	**100.32**	128.49	119.96	101.32	126.28	79.45	112.65	89.06
2000	**139.92**	118.99	151.88	102.02	118.56	118.02	112.01	124.92
2001	**129.94**	107.09	106.16	102.99	103.91	125.05	110.63	117.46
2002	**92.36**	127.16	149.59	103.38	124.62	74.12	96.77	95.44
2003	**105.86**	118.91	117.01	103.06	115.22	91.88	107.24	98.71
2004	**92.54**	119.13	135.87	102.91	117.14	79.00	98.11	94.32

Annex 2.

Non-life insurance: a comparison between the method suggested by the *OECD TF* and the one based on the sum of premiums and claims

Year	***Annual growth rate***			***Method Task Force***		***Method premiums+claims***	
	Output	Premiums	Claims	Volume index	Price index	Volume index	Price index
1993	**108.56**	102.76	98.31	94.46	114.93	96.43	112.59
1994	**115.87**	106.27	104.41	100.04	115.82	100.78	114.98
1995	**111.41**	110.39	110.37	102.53	108.66	104.65	106.46
1996	**104.33**	105.20	109.47	98.67	105.74	101.83	102.45
1997	**100.77**	106.72	109.28	100.95	99.82	104.83	96.13
1998	**98.88**	106.72	107.75	98.54	100.35	105.02	94.15
1999	**113.29**	107.12	107.43	96.95	116.85	105.16	107.74
2000	**107.36**	106.20	103.99	96.87	110.84	101.71	105.56
2001	**126.18**	107.36	107.49	96.92	130.19	104.30	120.97
2002	**111.93**	108.32	99.60	97.07	115.31	101.89	109.85
2003	**111.26**	105.55	105.87	100.48	110.73	102.53	108.52
2004	**96.17**	103.50	103.19	102.52	93.81	100.33	95.85

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[2] This is a B method.
[3] Data are expressed at previous year prices.
[4] In particular we refer to "*The production of financial corporations and price/volume measurement of financial services and non-life insurance servicies*" by Anders Nordin.