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Mark-up in the short and long run. A study with the Italian Inforum Model

Abstract: Operating Surplus (OS) – profits and other incomes - per unit of output enters price formation in a cost-push approach under the name of *mark-up*. This paper presents an investigation for modelling OS impact on price formation in the framework of an Inforum-type model (Almon, 1991). On the basis of an empirical analysis of economic data of three European countries – Italy, France and Germany – the OS value-added share closely follows total output in current prices. This correlation offers a rule for making the mark-up an endogenous variable. The consequence of modelling the mark-up is evaluated using the Italian Inforum-type model (Grassini, 2013). The simulation presented in this paper reveals that the behavior of the OS value-added share has a countercyclical effect.
Keywords: mark-up, multisectoral model, simulation, forecasting, countercyclical
JEL: E32, E37

1. Introduction

Operating Surplus (OS) – profits and other incomes - per unit of output enter price formation in a cost-push approach under the name of *mark-up*. The role played by OS in price formation is investigated by means of the multisectoral Italian Inforum-type model. The investigation begins by analyzing economic data strictly related to the OS of three European countries in the Euro Area: Italy, France and Germany. These countries - located in the heart of the European Union - account for a population of 240 billion and represent the relative largest economies in the European Union as well as in the Euro Area. From this analysis and a close investigation of Italian data, a rule for modelling the mark-up can be proposed. The relevance of modelling OS in price formation is assessed by comparing simulations made using the Italian multisectoral model. First, a description - with key references - of the Italian Inforum-type model is given.

2. The model

The Italian Inforum Model (originally INTerindustry Italian Model, INTIMO) is one of a number of country models originating from Inforum (originally stood for "INterindustry FORecasting at the University of Maryland"). The economic data cornerstone of these models is the IO table which today forms part of an encompassing system of accounts (EUROSTAT, 2013); their theoretical foundation is not limited to the basic properties of the leontievian IO standard model (Miller, Blair, 2009). Richard Stone (1984) observed: "The development of IO models seems to be leading in directions in which the IO core is becoming less and less discernible. This is as it should be, because it shows the possibility of improving the very simple relationships which were used initially". The Inforum modeling approach is one of the directions taken by the basic original Leontief proposal; in particular, according to Dietzenbacher (2015), one distinctive character of the Inforum type model is the interaction of prices and quantities which is absent in a standard input-output system (a statement that is, albeit not explicitly, supported in Miller and Blair (2008) in their input-output analysis classic textbook).

Given its type and the size of the economy, the Inforum type model deserves a more descriptive definition. It could be named Interindustry Macroeconomic (IM) model — "Interindustry" to stress the presence of an input-output structure and the many industries in the models and "Macroeconomic" to stress that all the normal variables of macroeconomics (GDP, inflation, interest rates, employment, and unemployment) are covered. Like macroeconometric models, they use regression analysis of time-series. However, they do not begin from a macro projection allocated to industries. Instead, the macro totals are obtained by summing the industry details: total employment is calculated by summing up the employment computed for each sector, and so on. This implies a detailed specification of a large number of equations for personal consumption items, for sectoral investment functions, for sectoral labor compensation, for imports and exports of different commodities, for some kinds of public expenditure and so on. The huge econometric work required in these models is remunerated in terms of richness of design of policy scenarios for policy simulations. The analytical structure of an Inforum-type model is described in a number of papers (Almon, Grassini (1994, 2004), Bardazzi, Grassini(2004).

An Inforum model is designed to run together with all the other members of the family; a Bilateral Trade Model (BTM) enables its implementation; it allows making (sectoral) exports and (sectoral) import prices endogenous to the system of models while they would be unavoidably exogenous in a stand-alone model run. Overall, BTM is what links the country models system. The first release was created by Douglas Nyhus (1975); later, MA(1996) developed a new release after a lot of econometric work; recently, the BTM database has been rebuilt and a new econometric estimation has been used to tackle a number of practical and theoretical problems associated with this kind of empirical research (Bardazzi, Ghezzi, 2018).

Inforum models have another special feature in common: model builders in different countries all work with a common software. It makes it possible to build a wide variety of models with relative ease, to penetrate into the workings of the model, and to use it flexibly. It also facilitates international cooperation in the construction of the models and makes their linking possible. This software, named Interdyme, is of public domain and available at www.Inforum.umd is accompanied by "The Craft of Model Building" (freely downloadable) written by the Inforum founder, Clopper Almon; it offers an extensive explanation of what is needed for multisectoral modelling.

3. The Data[1]

A preliminary investigation of the variables involved in modelling the mark-up begins with employment, which is a quantitative economic variable to which value-added is related.

Total Employment. Germany showed a contraction in the first decade of the present century while France and Italy enjoyed smooth growth. After the Great Recession (GR) Germany saw a remarkable increase while the trend for France was flat and for Italy clearly downhill. Between 2001 and 2015 in Italy total employment increased by 1.02 billion workers, 1.40 in France and 3.26 in Germany. These increases followed different paths; Tab.1 shows the percentage change of these increases in the periods before and after the GR. In the interval 2001- 2015, Germany showed the best performance while in the first period it lagged behind Italy and France, it made a huge recovery in the second period; structural reforms (mostly concerning the labor market) that took place earlier in the present century were largely related to such performance. The Italian economy performed best in the first period and worst in the second when employment suffered a negative trend. In France employment followed a relatively smooth path.

[1] The sources of the economic date used in the present research are ISTAT, Eurostat, OECDStat.

Tab. 1. Total Employment. Rates of growth

years	2001-15	2001-08	2009-15
Italy	4,4	4,0	-1,7
France	5,3	4,3	2,1
Germany	8,2	2,6	5,3

Self-employed shares over total employment. While self-employed shares in France and Germany account for around 10%, Italy shows a remarkable share of about 1/5 of the total employment, demonstrating its specific industrial structure. This share followed a slightly negative trend; however, it is a distinctive feature that matters in the composition and, hence, the cycle of the OS.

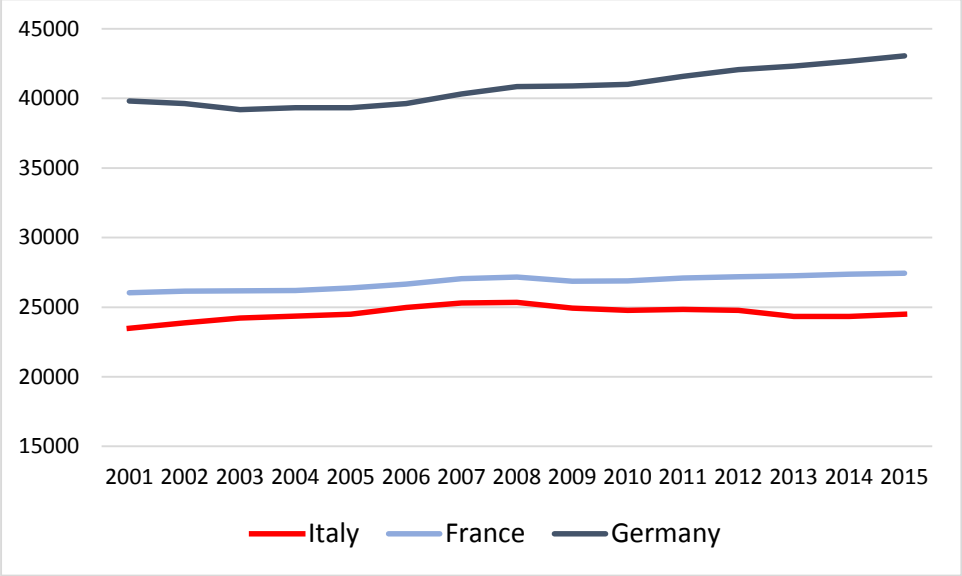

Figure 1. Total employment - Billion

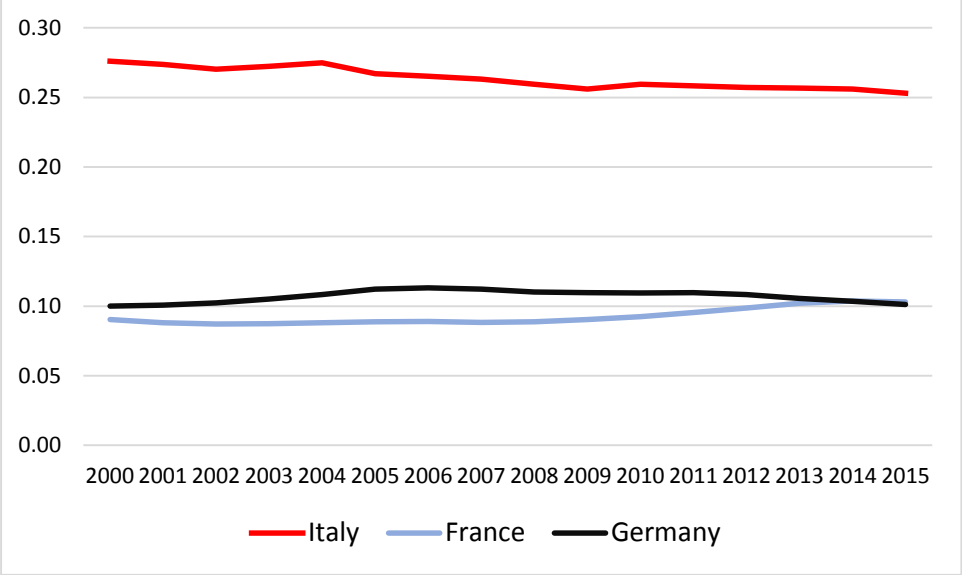

Figure 2. Total employment. Self-employed shares

Public employees' share over total employment. Its Napoleonic legacy poses France at the top of public administrative weight. Germany maintains its quota around 23%. Italy shows a clear decline in its relative lowest share. In terms of numbers of public employees, Italy showed a greater increase than France and Germany in the period 2001-2008; after 2009 the number of public employees began to fall while that of France followed a flat trend and that of Germany soared.

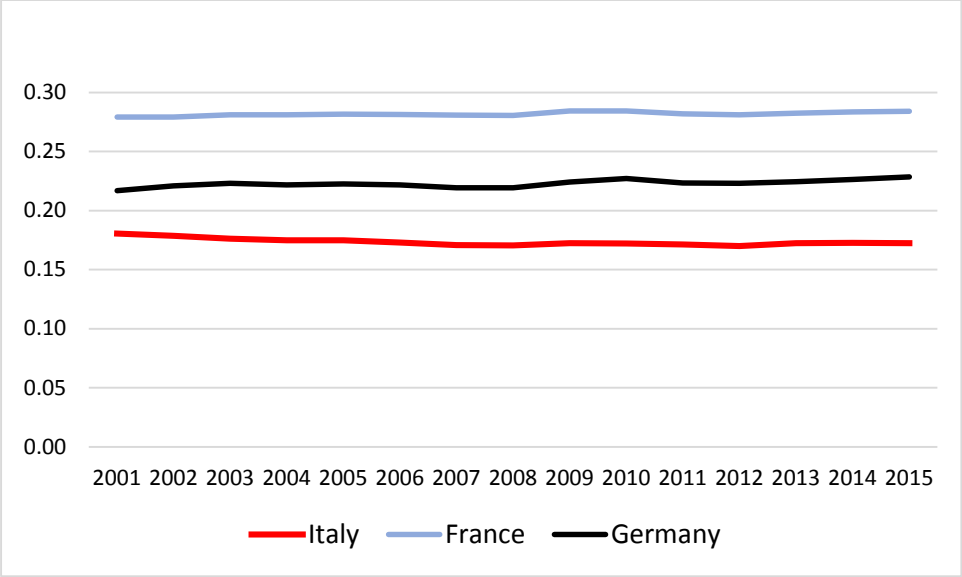

Figure 3. Public administration employees' share over Total employment

The macro value-added components considered in the following examination are labor compensation, wages, and OS.

Labor compensation(billion). After a decade of a stationary wage bill, Germany increased labor compensation faster than France, while Italy has kept its wage bill constant since the outbreak of the GR

Operating Surplus (billion). This component of the total value-added is not as linear as that of its complement: labor compensation. The OS appears to be responsive to the economic cycle. This fact is relevant to modeling OS in the framework of the nominal side of an Inforum-type model. Modelling hints are given by the Labor compensation and OS rates of growth.

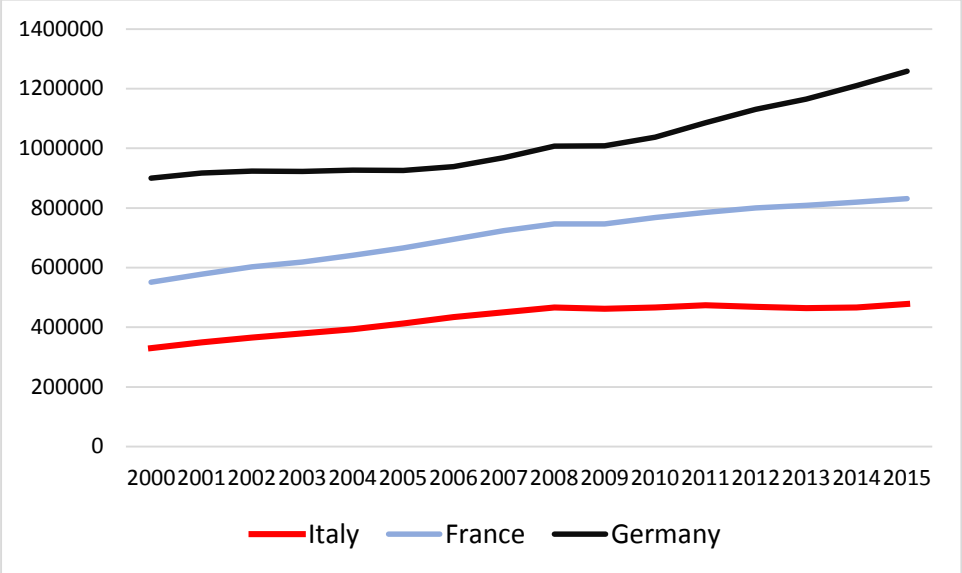

Figure 4. Labor compensation. Billion euro

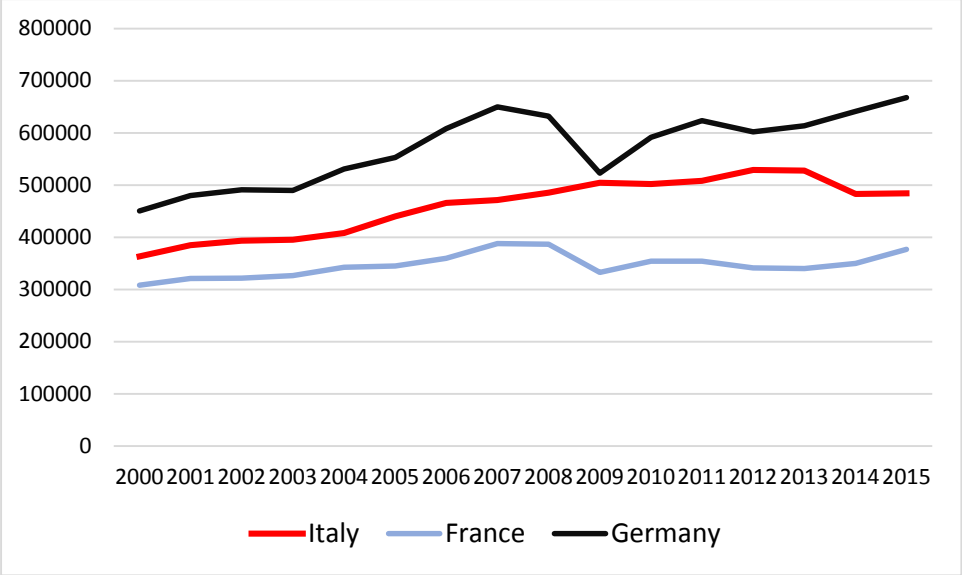

Figure 5. Operating surplus. Billion euro

Labor compensation (rates of growth) and OS (rates of growth), Comparing the graphs of Labor compensation and OS rates of growth, the differences between the countries is striking. While OS rates of growth are closely correlated, those of Labor compensation appear to be loosely related with relatively clear erratic cases: France before and Italy after the GR. This means that the three economies' OS follow a common cycle while Labor compensation has been affected by structural changes incurred in their labor markets.

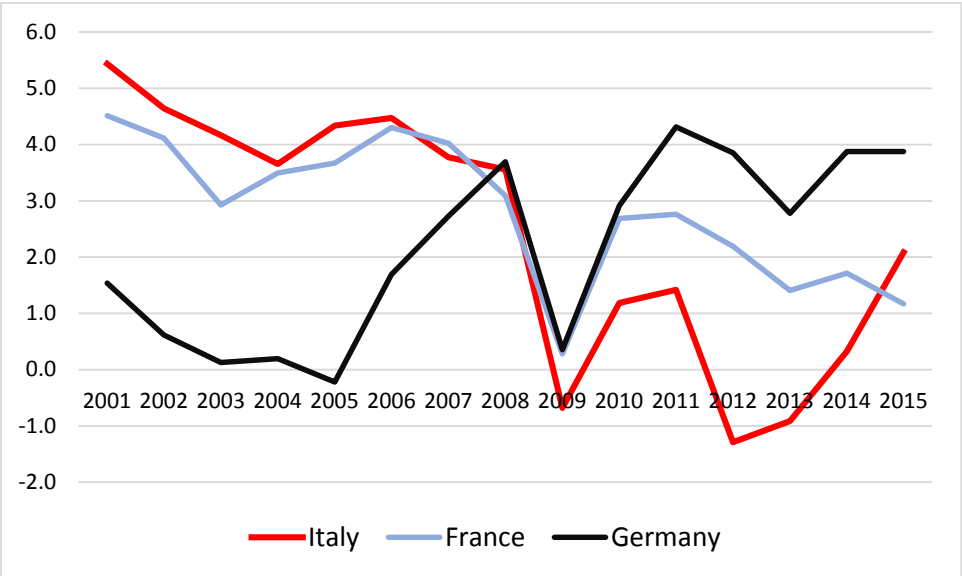

Figure 6. Labor compensation. Rates of growth

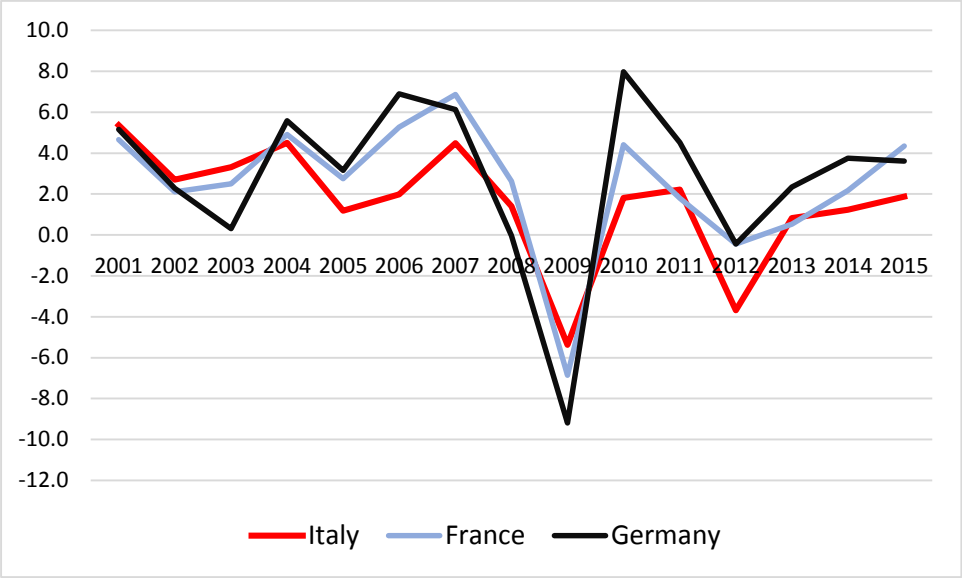

Figure 7. Operating surplus (OS). Rates of growth

Labor productivity (index 2000=1.0). Total Output/Total employment ratios show that Italy has suffered declining productivity while productivity in France and Germany steadily grew after the GR. This is a distinctive feature of the Italian economy that contrasts with the positive results continuously recorded on foreign trade. It is easy to interpret such incongruity if one thinks of the dualism of the Italian industrial structure: in particular, among small and medium industries, high-tech firms compete successfully on the foreign market while a large number of them seem condemned to go out of business if not specifically sheltered.

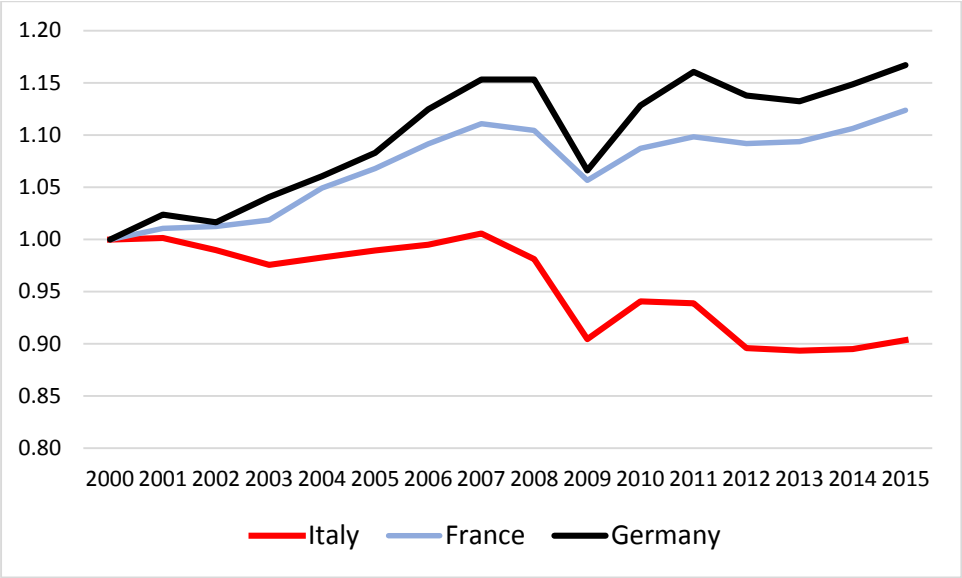

Figure 8. Labor productivity. Index 2000=1

4. Modelling value-added components. State of the art of the Italian Inforum Model

The components of value-added in the Italian model are: wages, social insurance contributions, indirect taxes on production, subsidies and operational surplus (OS). Social insurance contributions, indirect taxes and subsidies are on the side of the scenario variables. Wages are endogenous variables and modelled in the

framework of the prevailing rules in the labor market; here, OS is tentatively modelled inspired by the description of the value-added components of the three European countries and the following focus on the Italian time series.

Labor compensation and OS in Italy. OS appears more reactive to the cycle (and to GR) than Labor compensation (a common feature of the three economies)

Wages per employee. Approaching the specification of a wage equation, it is important to investigate the evolution of wages per worker in the private sector and in the public sector. It is clear that in the public sector wages per worker follow a path basically independent of that of the private sector.

Figure 9. Labor compensation and Operating Surplus. Billion euro

Before the Great Recession, the macro equation of wages was specified as follows: a) Phillips's curve was found inappropriate to explain the rate of growth of wages (inflation); traditionally, trade unions successfully defended employed workers at the same time making unemployment ineffective to the workings of the labor market; b) Indexation was assumed to operate whether legal or informal; c) furthermore, it was assumed that the increase of labor productivity would be shared between workers (wages) and employers (other incomes).

Wage growth & declining productivity A wage-productivity gap is a dominant character of the Italian economy both before and after the Great Recession

From (recent) history, the assumption that value-added distribution based on sharing the gain from productivity increases cannot be recognized from these time series. Truth to tell, even the hypothesis of wage indexation appears weakened. However, wages and inflation rise together, though not hand in hand.

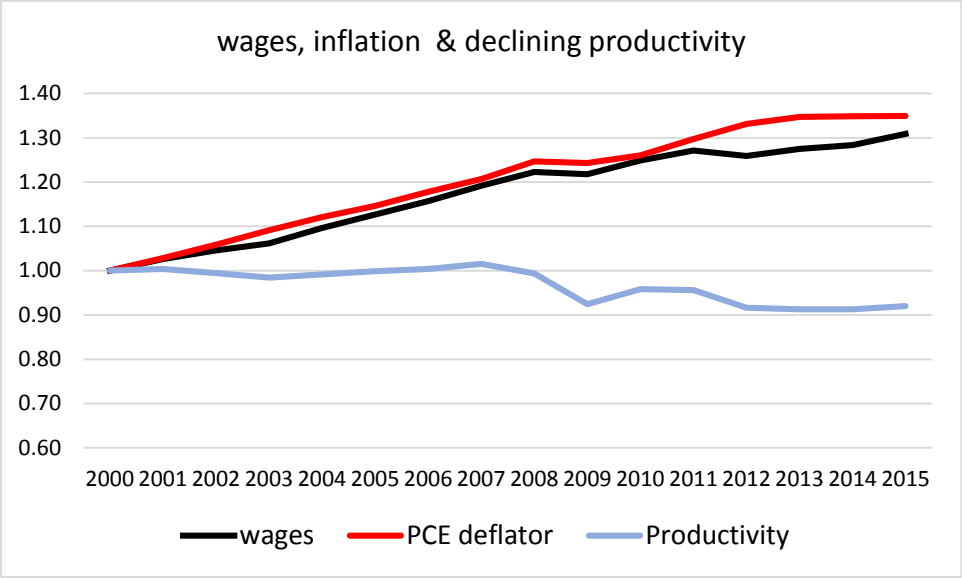

Figure 10. Wages, inflation and labor productivity. Index 2000 = 1

Two (main) components of value-added (rates of growth). The graph (Fig. 11) shows the difference in amplitude of the rates of growth of the two value-added components.

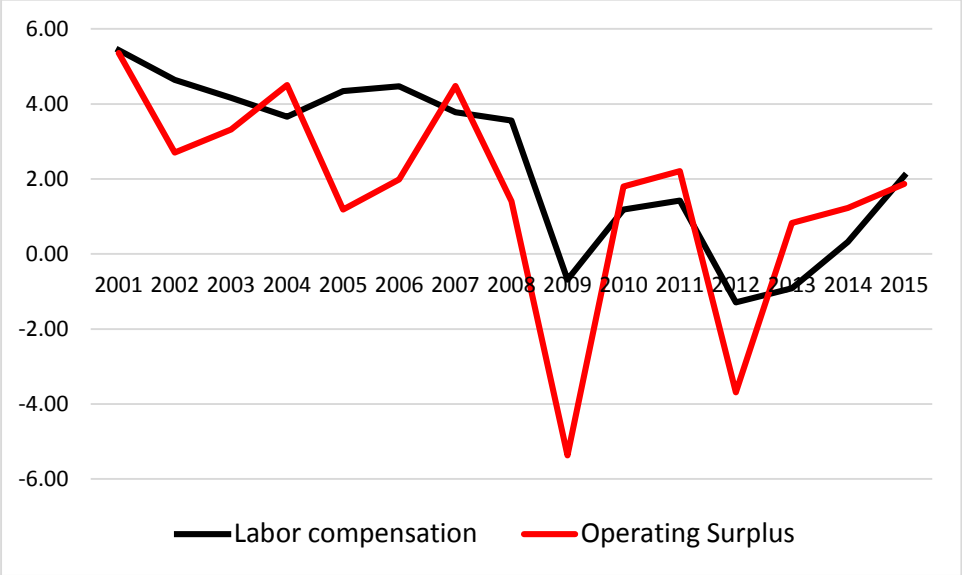

Figure 11. Labor compensation and Operating Surplus. Rates of growth

Furthermore, regarding the effect of the Italian labor market reforms and the performance in foreign trade, IMF working papers WP/18/61 and WP/18/60 suggest: a) Increases in wages and ULCs have not translated into commensurately higher prices of goods and services, in part due to the pricing-to-market behavior of Italian exporters. Rather, adjustment has been on profit margins, or employment and investment; b) wages are set at the sectoral level and extended nationally; however, they do not respond well to firm-specific productivity, regional disparities, or skill mismatches; c) nominally rigid wages have also implied adjustment through lower profits and employment.

5. A rule for modeling the impact of OS.

In an Inforum model (sectoral) prices and (sectoral) outputs are endogenous; sectoral value-added components (mostly wages) are endogenous too. In the Italian model, price equations are based on cost-push price formation so that in forecasting, OS as a component of the cost of production needs to be made available. At present, the total OS is computed by multiplying labor compensation by a factor, facOS. This factor (the ratio of OS over labor compensation) is not constant over time as shown by their rates of growth (Fig. 14).

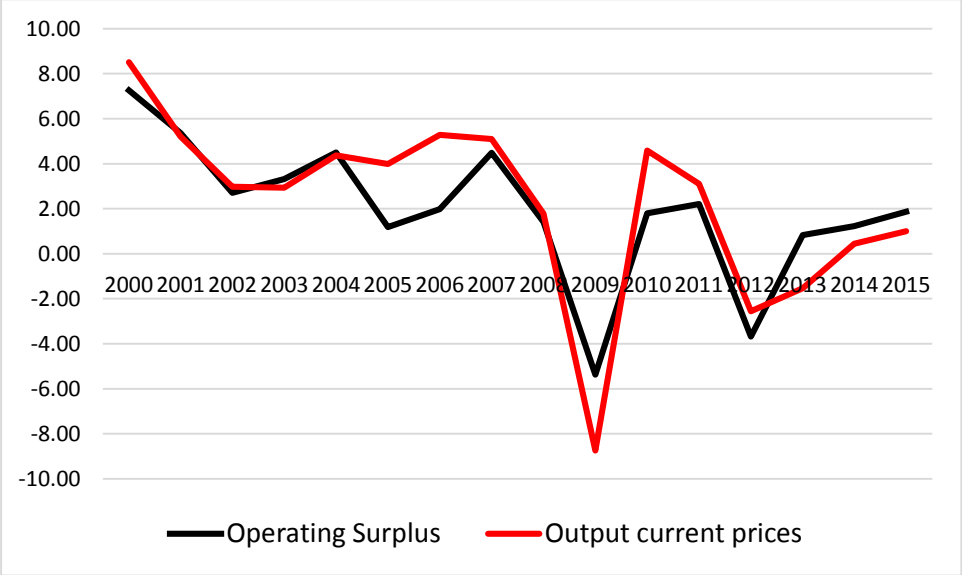

Figure 12. Operating Surplus OS and total output in current prices. Rates of growth

The good correlation between OS and Output in current prices (Fig. 14) suggests a rule for modeling the facOS. The rule is presented in the shape of the following regression. The dependent variable is the facOS; the independent variable is the ratio of the output, out, in current prices over its lagged value: out/out_{-1}. The following regression, estimated in the period after the GR, accounts for $R^2 = 0.79$ (t values are in parentheses)

$$facOS = 0.50 + 0.59 * out/out_{-1}$$
$$(3.30) \quad (3.89)$$

and states that facOS varies around its mean value increasing when the economy accelerates and decreasing when the economy slows down.

6. The OS in the model

In the model, OS is a component of value-added per unit of output. First wages, social security, subsidies, indirect taxes are computed by means of behavioral equations and from scenario variables; then, OS is computed by multiplying the sum of the other value-added components by the OS factor. According to the above analyses, this factor can now be endogenized applying the above rule.

Here the impact of the OS factor is evaluated by comparing two simulations obtained with the Italian Inforum model. One simulation, named 'baseline', is obtained with a scenario defined 'business as usual'. The alternative simulation, 'OS factor impact', is based on a 5% reduction of the 'business as usual' OS factor for all industries for the year 2017; however, it is worth stressing that specific sectoral scenarios are workable and certainly important for tackling the case of industries forced for any reason to shrink or freely expand their OS shares.

The contraction of the OS factor enters the model in the cost-push price formation and, therefore, its first impact is on prices. Tab. 2 displays the industry prices of the two simulations; for each industry the first line shows the rates of growth of the 'baseline'; the second row shows the 'OS factor impact' simulation as differences from the 'baseline'. The effect of a common reduction of the OS factor produces different impacts on sectoral prices; in fact, OS value-added shares are industry specific (together with the labor compensation which is determined, among others factors, by inflation).

Tab. 3 shows the value-added components obtained through the bottom-up procedure which is a distinctive property of Inforum multisectoral models. The sectoral total of OS in the 'OS factor impact simulation' shows a contraction, -40173, deriving from the effect of the 5% reduction of the OS factor. OS enters the price equation producing a general reduction of prices (Tab. 2); that reduction is transferred to all the endogenous nominal sectoral variables. In the alternative run, indexation makes private sector wages grow more slowly and, consequently slower social security growth is observed. Taxes on production and subsidies are pure policymaker instruments and consequently are exogenously determined; in both simulations taxes on production and subsidies are left to grow at 2%. In both simulations, public sector wages are insignificantly connected to private sector wages.

Tab.4 shows the secondary value-added distribution which determines household disposable income (whereas Tab. 3 displays the value-added distribution of the primary factors). The shrinkage of the OS in the alternative run produces a reduction of Other Incomes; this reduction together with that of wages leads to a contraction of household disposable income.

The real side variables of the model are recorded in Tab 5. These variables all come from the IO table and enter the model with their sectoral detail; household personal consumption, investment, imports, and other contributions coming from model components such as real sectoral public consumption expenditures are all modelled at sectoral level. Following the bottom-up procedure, the simulation results are presented at an aggregation level common to any standard macro model. However, the multisectoral structure of the model must be kept in mind to better understand the impact of the OS factor contraction.

The general reduction of prices (Tab. 2) leads to a reduction of the personal consumption deflator (Tab. 6) such that real personal income increases and consequently personal consumption expenditure turns out to be greater than the baseline. This chain of reactions throws light on and at the same time obscures the working of the model. On the one side, the multiplier effect of personal consumption increases total output which in turn stimulates imports and investments; on the other side lower domestic prices make domestic production more competitive so that imports are expected to decrease. Neither the multiplicative effect nor the increase in competitiveness prevails and the impact of the OS contraction on imports turns out to be balanced.

On the model real side, the OS factor contraction impact on exports (Tab. 5) is null. For a stand-alone Inforum model, as in the present simulation, exports are assumed exogenous; in fact, Inforum country models are linked by means of a true bilateral trade model (BTM) that makes exports endogenous when the country models are run together[2]. Although a provisional econometric modeling of exports can be set up, in the present simulation exports have been intentionally listed among the exogenous variables. However, the impact of export increases due to the gain in price competitiveness only emphasizes the effect of the impact of the change in the OS share. Finally, it is understood that the differences of the alternative run recorded after year 2017 provide evidence of the dynamic structure of the model.

[2] The BTM model works as follow: from the national models, the BTM model takes imports by product, prices by product and capital investment by industry. From these data, it distributes the imports of each country among supplying countries. Price and technological progress (due to the impact of relative investment performance among countries) competitiveness drives imports to destination markets: their *vis a vis* exports. Whereas exports are exogenous for a stand-alone model, exports prove endogenous within the system of country models.

Lastly, Tab. 6 offers a panoramic view of rates of growth of real and nominal macro aggregates which help to explain the model outcome (and its working) triggered by a reduction of the OS factor. As an Illustrative example, total output increases in real terms and decreases in nominal terms because of its deflator; all the items in the table show the impact of what is recorded in the last line: the OS factor contraction of 5%.

7. Final Remarks

The impact of an OS share reduction measured using the Inforum model of the Italian economy makes it possible to assess its effect on a large number of nominal and real macro aggregates. The impact of a change in the value-added composition is not limited to the year when it takes place. Due to the properties of the model, the impact is effective in the short as well as in the long run. The rule of the OS factor modelled above can become part of the model so that the change in value-added composition works in long run as well as short run forecasting.

The model is 'multi-industry' and behind each macro variable such as imports, personal consumption, investment and so on, there are sectoral variables mostly econometrically estimated. Here only their macro aggregates are presented; the Italian Inforum model like any other member of the Inforum family follows the bottom-up approach: macro variables are obtained summing up industry details. OS is one of the model variables specified at sectoral level; consequently, the model works with sectoral OS factors. The present study has investigated the impact of an identical decrease of the OS factor for all the industry sectors. It is worth noting that sectoral OS factors (or equivalently OS value-added shares) make the model well suited to take into account specific market behavior prevailing at a sectoral level.

Tab. 2 Sectoral production prices (rate of growth). First row Baseline, second row OS factor in differences

Industries	2016	2017	2018	2019	2020
1 Products of agriculture, hunting	0,03	0,52	0,93	0,93	1,03
		-2,24	1,46	0,65	0,11
2 Products of forestry, logging and related services	-0,57	-1,15	-0,51	-0,38	-0,23
		-1,45	0,77	0,53	0,11
3 Fish and other fishing products	3,56	3,66	4,16	4,12	4,28
		-1,88	1,24	0,52	0,10
4 Mining and quarrying	3,20	1,89	3,66	2,67	2,93
		-1,37	1,08	0,23	0,05
5 Food products, beverages and tobacco products	1,08	2,22	2,12	2,20	2,23
		-0,44	0,28	0,13	0,03
6 Textiles, wearing apparel and leather products	1,18	2,45	2,72	2,51	2,58
		-0,54	0,32	0,17	0,03
7 Wood and of products of wood and cork	1,14	2,23	2,63	2,59	2,50
		-0,72	0,52	0,19	0,02
8 Paper and paper products	0,80	2,11	2,29	2,22	2,22
		-0,39	0,23	0,13	0,02
9 Printing and recording services	1,86	1,82	2,41	2,41	2,37
		-0,78	0,47	0,26	0,05
10 Coke and refined petroleum products	-1,31	2,63	2,10	2,08	2,08
		-0,12	0,08	0,03	0,01
11 Chemicals and chemical products	0,36	3,30	2,95	2,98	3,08
		-0,47	0,29	0,15	0,03
12 Basic pharmaceutical products	0,09	1,99	2,31	2,19	2,32
		-0,85	0,57	0,22	0,05
13 Rubber and plastics products	0,93	2,17	2,20	2,25	2,27
		-0,53	0,31	0,18	0,04
14 Other non-metallic mineral products	2,12	2,34	3,05	2,84	2,70
		-0,53	0,28	0,20	0,04
15 Basic metals	-0,02	2,76	2,30	2,27	2,27
		-0,16	0,05	0,09	0,02
16 Fabricated metal products	2,09	2,50	2,95	2,99	2,91
		-0,63	0,35	0,22	0,04
17 Computer, electronic and optical products	1,56	2,73	2,76	3,10	2,55
		-0,61	0,36	0,21	0,04
18 Electrical equipment	0,29	2,29	1,72	2,02	2,09
		-0,49	0,27	0,18	0,04
19 Machinery and equipment n.e.c.	1,60	2,46	2,55	2,73	2,70
		-0,52	0,29	0,20	0,04
20 Motor vehicles, trailers and semi-trailers	1,61	2,40	2,27	2,39	2,40
		-0,39	0,18	0,17	0,03
21 Other transport equipment	1,90	2,32	2,30	2,45	2,44
		-0,50	0,25	0,20	0,04

22 Furniture;other manufactured goods	1,71	2,54	2,71	2,83	2,85
		-0,66	0,42	0,19	0,04
23 Repair and services of machinery and equipment	4,91	4,41	4,56	5,92	5,36
		-1,09	0,68	0,34	0,07
24 Electricity, gas, steam and air-conditioning	1,33	1,45	1,81	1,90	1,87
		-0,83	0,69	0,12	0,02
25 Natural water;water treatment and supply services	2,39	2,02	3,28	3,50	3,40
		-1,18	0,85	0,27	0,05
26 Sewerage;waste collection	1,86	2,21	2,14	2,19	2,22
		-0,30	0,11	0,15	0,03
27 Constructions and construction works	2,31	2,48	2,49	2,90	2,69
		-0,87	0,61	0,21	0,04
28 Wholesale and retail trade and repair services of motor vehicles and motorcycles	2,64	2,54	2,80	3,06	2,99
		-1,03	0,70	0,27	0,05
29 Wholesale trade services	2,11	2,26	2,59	2,68	2,69
		-1,34	0,97	0,31	0,06
30 Retail trade services	1,76	1,84	2,19	2,31	2,37
		-1,72	1,22	0,41	0,08
31 Land transport services and transport services	2,89	2,76	3,43	3,50	3,47
		-1,45	1,03	0,35	0,07
32 Water transport services	2,79	4,58	3,72	3,76	3,83
		-0,82	0,54	0,23	0,04
33 Air transport services	0,42	2,23	1,84	2,12	2,20
		0,32	-0,42	0,08	0,02
34 Warehousing and support services for transportation	1,74	1,90	2,16	2,25	2,29
		-0,99	0,64	0,29	0,06
35 Postal and courier services	0,72	1,52	1,25	1,21	1,45
		0,01	-0,41	0,31	0,06
36 Accommodation and food services	2,72	2,77	3,06	3,20	3,24
		-1,36	0,86	0,40	0,08
37 Publishing services	2,24	2,91	2,99	3,08	3,09
		-0,47	0,18	0,23	0,05
38 Motion picture, video and television pruduction	1,56	1,93	2,10	2,14	2,18
		-1,03	0,64	0,31	0,06
39 Telecommunications services	-0,47	0,10	0,10	0,40	0,60
		-1,43	1,08	0,29	0,06
40 Computer programming and related services	1,48	1,47	1,44	2,13	1,94
		-1,11	0,70	0,34	0,06
41 Financial services	0,27	0,12	0,59	0,97	0,88
		-1,32	0,93	0,31	0,06
42 Insurance and pension funding services	1,50	1,74	1,87	1,95	1,98
		-1,08	0,82	0,21	0,04
43 Services to financial services and insurance services	1,06	0,62	1,43	1,53	1,49
		-1,85	1,37	0,39	0,07
44 Real estate services	1,27	1,25	1,18	1,56	1,65

		-3,98	3,88	0,08	0,02
45 Legal and accounting services	3,35	3,56	3,85	4,05	4,11
		-2,31	1,82	0,40	0,08
46 Architectural and engineering services	1,02	0,94	1,32	1,77	1,67
		-2,18	1,72	0,38	0,07
47 Scientific research and development services	3,49	3,44	2,32	4,87	3,96
		-0,82	0,29	0,44	0,09
48 Advertising and market research services	1,87	2,65	2,43	2,49	2,60
		-0,72	0,48	0,19	0,04
49 Other professional, scientific and technical services	3,41	3,52	3,94	4,14	4,11
		-2,27	1,80	0,39	0,07
50 Rental and leasing services	1,61	1,71	1,92	2,03	2,08
		-1,56	1,31	0,20	0,04
51 Employment services	8,54	8,64	9,35	9,53	9,65
		-0,20	-0,55	0,61	0,12
52 Travel agency, tour operators	1,71	2,24	2,24	2,26	2,28
		-0,31	0,17	0,12	0,02
53 Security and investigation services	2,08	1,72	2,27	2,54	2,43
		-0,83	0,45	0,32	0,06
54 Public administration and defence services	-1,14	-0,16	-0,34	-0,16	-0,07
		-1,07	1,07	0,00	0,00
55 Education services	-1,49	-0,11	-0,57	-0,21	-0,15
		-0,39	0,39	0,00	0,00
56 Human health services	-0,76	0,12	0,02	0,15	0,23
		-1,09	1,09	0,00	0,00
57 Social work services	0,84	1,53	1,47	1,55	1,60
		-0,35	0,35	0,00	0,00
58 Creative, arts and entertainment services	1,08	1,27	1,40	1,47	1,52
		-1,01	0,71	0,24	0,05
59 Sporting services and recreation services	1,32	1,58	1,70	1,78	1,84
		-0,70	0,47	0,19	0,04
60 Services furnished by membership organisations	0,86	1,23	1,38	1,40	1,36
		-0,19	-0,08	0,21	0,04
61 Repair services of computers and other goods	3,43	3,60	3,89	4,53	4,34
		-1,89	1,43	0,37	0,07
62 Other personal services	0,65	1,17	1,56	1,65	1,73
		-2,32	1,71	0,50	0,09
63 Services of households as employers	0,13	-0,01	0,72	0,94	1,03
			-0,95	0,77	0,15

Tab. 3 Value-added components. First row Baseline, second row OS factor in differences

year	2016	2017	2018	2019	2020
Wages	480929	497165	516764	534668	551962
	0	-1018	-2566	1132	2299
- Private sector	356243	372259	391401	408572	425030
	0	-1029	-2601	1076	2226
- Public sector	124686	124906	125363	126096	126932
	0	11	36	56	74
Social Security	175097	180881	187839	194137	200186
	0	-407	-882	391	788
Taxes on production	61991	63243	64520	65824	67154
	0	0	0	0	0
Subsidies	8705	8881	9061	9244	9430
	0	0	0	0	0
Operating Surplus	786849	813179	844408	872630	900014
	0	-40173	-3426	1720	3325

Tab. 4 Household Disposable Income formation. First row Baseline, second row OS factor in differences

year	2016	2017	2018	2019	2020
Wages	480929	497165	516764	534668	551962
	0	-1018	-2566	1132	2299
Other Incomes	397281	410575	426343	440592	454418
	0	-20283	-1730	869	1679
Welfare	362216	362216	362216	362216	362216
	0	0	0	0	0
Disposable Income	1033151	1057747	1087204	1113984	1139904

Tab 5. Resources and Uses. First row Baseline, second row OS factor in differences

Colonna1	2016	2017	2018	2019	2020
Total Production	3113338	3180639	3237261	3260865	3277104
	0	3469	5572	6506	6465
Gross Domestic Product	1577203	1603465	1630175	1642554	1651756
	0	1771	2891	3485	3643
Imports	416394	430678	441878	448989	455317
	0	-30	300	601	750
- goods	353204	365690	375405	381578	387036
	0	223	460	622	669
- services	63189	64988	66474	67412	68281
	0	-252	-160	-21	82
Uses					
Household Consumption	949659	958245	967056	976099	985379
	0	1055	2048	2978	3843
Government Expenditure	315880	318880	323699	328591	333557
	0	0	0	0	0
NPO Consumption	9174	9384	9526	9670	9816
	0	0	0	0	0
Investments	276602	273221	287775	283408	274571
	0	686	1143	1108	550
Exports	442283	474413	483997	493775	503750
	0	0	0	0	0
- goods	376595	403953	412114	420439	428932
	0	0	0	0	0
- services	65688	70460	71884	73336	74817
	0	0	0	0	0

Tab. 6 Macroaggregates and Deflators rates of growth. First row Baseline, second row OS factor in differences

year	2016,00	2017,00	2018,00	2019,00	2020,00
Total output constant	1,05	2,14	1,76	0,73	0,50
	0,00	0,11	0,06	0,03	0,00
Total output current	2,41	4,06	3,82	3,00	2,76
	0,00	-1,12	1,03	0,29	0,07
Consumption Deflator	2,05	2,83	2,91	3,08	3,14
	0,00	-1,38	1,31	0,34	0,15
Total production Deflator	1,36	1,92	2,05	2,27	2,26
	0,00	-1,22	0,96	0,26	0,08
Imports Deflator	-3,41	2,98	1,98	1,99	1,99
	0,00	0,00	0,00	0,00	0,00
Wages per capita					
- Private sector	1,71	1,99	2,48	2,58	2,70
	0,00	-0,37	-0,48	0,88	0,24
- Public sector	-0,30	-0,10	0,10	0,10	0,20
	0,00	0,00	0,00	0,00	0,00
Social Securities	2,40	3,25	3,77	3,30	3,07
	0,00	-0,23	-0,25	0,67	0,19
Taxes on production	2,00	2,00	2,00	2,00	2,00
	0,00	0,00	0,00	0,00	0,00
Subsidies	2,00	2,00	2,00	2,00	2,00
	0,00	0,00	0,00	0,00	0,00
Operating Surplus	2,81	3,29	3,77	3,29	3,09
	0,00	-5,07	4,66	0,60	0,17

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