

## ASSESSMENT OF MUTUAL ECONOMIC RELATIONS THE COUNTRIES OF THE WORLD ON THE BASIS OF INPUT-OUTPUT TABLE

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### Abstract

“Input-Output” table which was designed for solution of mutual relation(impact) problem is widely applied tool in the world for conducting economic analysis and forecasting.

One of the most important problem of our today’s world is to prevent financial-economic crises in several countries of the world and especially in Eurozone countries where it is still ongoing.

Input-output balance tables were prepared by modifying input-output table based on relevant economic indicators of the biggest countries of the economy of the world as well as simulations were conducted by designing several balance models(mutual impact of GDP and change in general output of countries, mutual impact of added value and prices, mutual impact of GDP and work places).

Level of coverage of relevant indicators used in analysis on the countries of the world were tested on the basis of statistic methods and assessed. It was identified that, level of confidence of the coverage of designed model on world economy is higher than 95%.

These models enables to analyze and forecast possible changes in world economy caused by changes took place in economic conjecture of other big countries of the world, especially in USA, Japan, Germany and China. It should be noted that, model’s system was automatized in EXCEL system with the purpose of simplifying simulations and conducting analysis and increasing efficiency on the usage of models.

**Key words:** Input-output, GDP, final product, general output, workforce, added value, prices.

### 1. Introduction

"Input-Output" system that was elaborated for the resolution of the mutual relations problem is the most widely spread method over the world for provision of economic analysis and forecasting. This method creates an opportunity to define micro-and macro-economic variables under inter-structural reciprocal influence, as well as inter-country relations, as the measuring instrument of the influence on the main macroeconomic indicators.

Overcoming the financial crisis in world countries is one of the most serious problems now. Modification and utilization of "Input-Output" chart while analyzing mutual economical relations of these countries creates an opportunity to evaluate the influence of changes (crisis) in one country on macroeconomic indicators of other countries including GDP, price level and the influence on the number of job vacancies.

Notice that input-output balance charts were elaborated in USSR for the first time in history. Thus, in 1926 the Central Statistic Department of the USSR published the national economy balance of Soviet Union for 1923-1924 economical year [1].

The emergence of modern calculating technics, as well as modern computer technologies creates a more wide scope of economical and mathematical modelling of inter - structural relations by input-output method. Thus, because of more inaccurate calculating machines in the past periods, as well as manual determination of the opposites in rather big matrices in inter-structural model, it was impossible to resolve combined equations or it was required to make too many calculations. The low level of the accuracy of calculating machines creates sometimes significant drawbacks in found solutions. Now “input-output” method has widely spread in majority of world countries as an instrument of economic structure analyze.

At the present moment “input-output” method is widely spread in majority of countries on the world as an instrument of economic structure analyze.

United Nations Organization is consistently improving the methodology of compiling input-output balance charts appropriately to the modern market relations, and it also gives advise to member states to take into consideration appropriate changes<sup>1</sup>.

Since 90<sup>th</sup> years of the past century, they started to elaborate the “Social Calculations Matrix” (SCM), which was based on the principles of compilation of the "input-output" chart but at the same time covered the social-economic system of the country in more wide range of aspects. SCM is a constituent part of the National Calculations System (NCS) and is calculated and compiled by State Statistics Institutions in number of countries. Common Balance Model (CBM) which was built on the base of the SCM is distinguished by its perfection. At the moment more than 100 countries all over the world use CBM models which are elaborated on governmental level and are implemented while provision of analyzes and forecasting of social-economic indicators of the state (as well as forecasting of revenues from taxes according to separate kinds of taxes). Notice that creation and implementation of the CBM was provided according to the Leontyev’s “input-output” model realization principles.

Generally, it is possible in order to get more information about Input-Output table from these literatures - [2], [4], [6], [5], [7, p.13-28], [8], [9], [10], [11, p.262-271], [12].

## 2. Theoretical and methodological basics of “Input-output” model

“Input-output” model creates opportunities to define overall influence of certain economic indicators (e.g. last product) on other indicators (e.g. the volume of product output, value added, level of employment, fixed capital, taxes etc.).

The general impact on the volume of product output is defined by the formula:

$$\Delta X = (E - A)^{-1} \Delta Y = B \Delta Y \quad (1)$$

Here,  $\Delta X$  - designates general influence on output, in other words  $\Delta Y$  - indicates the changes in product output in the result of change of final product.  $B$  - is a matrix of overall expenditures.

After calculations according to the general influence on product output volume (1), influence of this change on the added value is:

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<sup>1</sup> Manual on compiling input-output charts and their analyze. United Nations Organization, New-York, 2000, Series F, N 74, p. 204.

$$\Delta V = v \Delta X \quad (2)$$

$$v = \frac{V}{X}$$

$v$  - vector of added value standard, in other words, it shows added value of the product output unit in each area. If we take into consideration the equality (1) in equality (2) we will be able to define the influence of change of final product on the change of added value with the following formula:

$$\Delta V = v B \Delta Y \quad (3)$$

(3) reflects the influence of the change of final product ( $\Delta Y$ ) on the change of added value ( $\Delta V$ )

Appendix of (1)- the model of balanced costs is following:

$$\Delta P = (E - A^T)^{-1} \Delta v = B^T \Delta v \quad (4)$$

Here,  $\Delta P$  - shows the change in level of prices and  $\Delta v$  - shows the change of the added value standard. So,  $A^T$  - is a transposed direct expenditures matrix and  $B^T$  - shows the transposed overall expenditures.

The impact of the change of overall output according to areas, on the changes in employment is defined in the following way:

$$\Delta L = t \Delta X \quad (5)$$

- direct labor capacity (consumption) coefficients vector, in other words, is the employment per unit of product output in each area (spent person-hours, person-days, person-year).

$$t = \frac{L}{X}$$

If we take into consideration the equality (1) in (5) we will get the following simulation formula:

$$\Delta L = t B \Delta Y \quad (6)$$

If we also take into consideration that  $T = tB$  in formula (6) we will get

$$\Delta L = T \Delta Y \quad (7)$$

Here,  $T$ - is the overall labor capacity (consumption) coefficient. (7) will show the changes in employment in the result of final product ( $\Delta Y$ ) change. As the result of equality of left parts of (5) and (7) we get the equality of right parts.

$$t \Delta X = T \Delta Y \quad (8)$$

Equality (8) reflects the connection between direct labor capacity coefficient and overall labor capacity coefficient.

The general influence of the overall output change ( $\Delta X$ ) on capital collection ( $\Delta K$ ) is expressed like formula

$$\Delta K = f \Delta X \quad (9)$$

Here,  $f$  - is the vector of capital collection coefficient, in other words, it shows produced, or even still not produced assets (e.g. ground) in each area, according to unit of the product output in each area.

$$f = \frac{K}{X}$$

if we take into consideration the equality (1) in (9), the change of final product in the areas of economic activity ( $\Delta Y$ ) influences capital collection changes ( $\Delta K$ ) and in order to define the multiplicative effect we will get the following simulation model:

$$\Delta K = f B \Delta Y \quad (10)$$

If we take into consideration that  $F = fB$  in (10) we will get the following equality.

$$\Delta K = F \Delta Y \quad (11)$$

From the equality of left parts of (9) and (11) we get the equality of right parts.

$$f \Delta X = F \Delta Y \quad (12)$$

The equality (12) reflects the connection between direct capital capacity collection coefficient and overall capital capacity collection coefficient.

It is known that, tax burden is defined as the ratio of collected taxes and the products produced.

$$tn = \frac{TAX}{X}$$

Here,  $TAX$ - is the amount of collected taxes. Then the influence of change of general release on the amount of collected taxes is defined as following:

$$\Delta TAX = v y \cdot \Delta X \quad (13)$$

If we take into consideration equality (1) in (13), then we get:

$$\Delta TAX = v y \cdot B \Delta X$$

If the added value, labor force, capital and taxes are distinguished into species, then we can write  $v, t, f$  and  $vy$  as a matrix. For example, added value unites in itself salaries of employees, profits of entrepreneurs, consumption of fixed capital, taxes, united with the products. The labor force could be divided into directing personnel, skilled professionals and experts.

### 3. Data base and processing of data

Data base of models includes official statistical information of USA, Belgium, Germany, United Kingdom, France, Italy, Japan, Canada, Chine, Australia, Mexico, South Korea and

Spain, “Input-Output” layouts, “National Calculations”, “Labor market”, statistical data, as well as international information and so on<sup>2</sup>.

**Table 1.** The ration of main indicators of Output-Input layouts of these countries are given in this table. (2005, millions in US dollars)<sup>3</sup>

	Total Intermediate Consumption	Value added at basic prices	Gross output	Finale producte
USA	10725067.8	12423851.5	23148919.3	12784738.81
Belgium	447537.2	335571.4	783108.6	338875.6964
Germany	2531761.4	2520021.9	5051783.3	2470250.924
United Kingdom	2074758.4	2030276.5	4105034.9	2090951.443
France	1946732.6	1924784.9	3871517.5	1994634.649
Italy	1875517.3	1597329.1	3472846.4	1640264.856
Japan	3995038.3	4533146.9	8528185.2	4538082.428
Canada	980014.6	1055493.8	2035508.4	996564.7956
Chine	4461851.1	2305206.3	6767057.4	2512671.561
Australia	665864	604308.8	1270172.8	572888.7509
Mexico	487747	663895.9	1151642.9	696240.5218
South Korea	1188167.2	831916.3	2020083.5	883307.2897
Spain	1187958	1012008.4	2199966.4	1101216.621
rest of the world	14827857.98	11785102.82	26612960.8	11002226.18

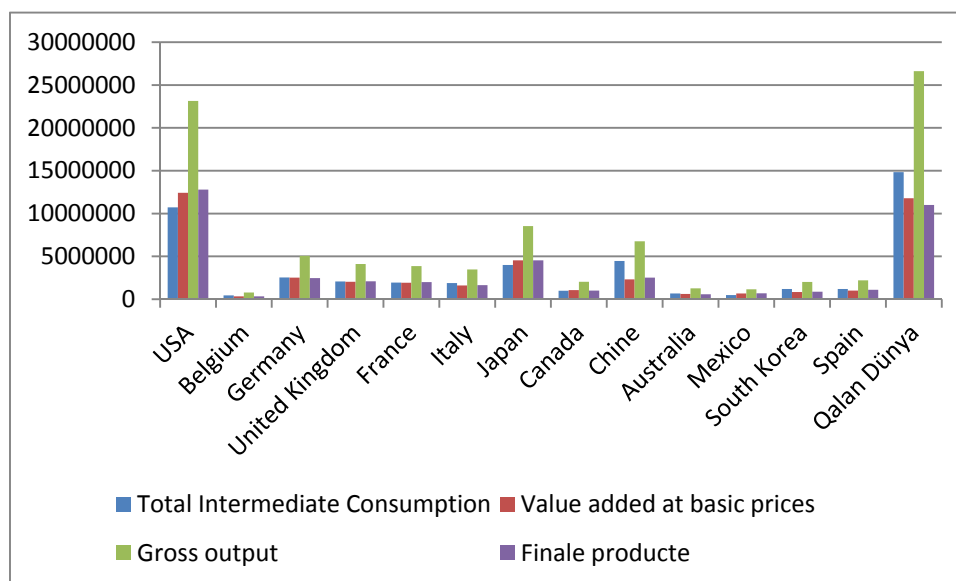
Source: <http://stats.oecd.org/Index.aspx>

As we understand from the Table 1 and Figure 1, the share of added value is higher than Intermediate Consumption in gross output in USA, Japan, Canada, Mexico, however in Belgium, Germany, United Kingdom, France, Italy, Chine, Australia, South Korea, Spain is lower.

*Figure 1.*

<sup>2</sup> <http://stats.oecd.org/Index.aspx>

<sup>3</sup> The Imports of Intermediate Goods and Services, estimates based on I/O tables dataset contains data on bilateral flows of intermediate inputs. Import values are estimates based on a combination of trade statistics with Input-Output (I/O) tables, computed by the OECD Secretariat for three reference years: 1995, 2000 and 2005. Bilateral imports of intermediate goods and services are available for 40 importing countries and for about 240 supplier countries or regions and broken down into 29 economic sectors, following the underlying International Standard Industrial Classification (ISIC rev.3).



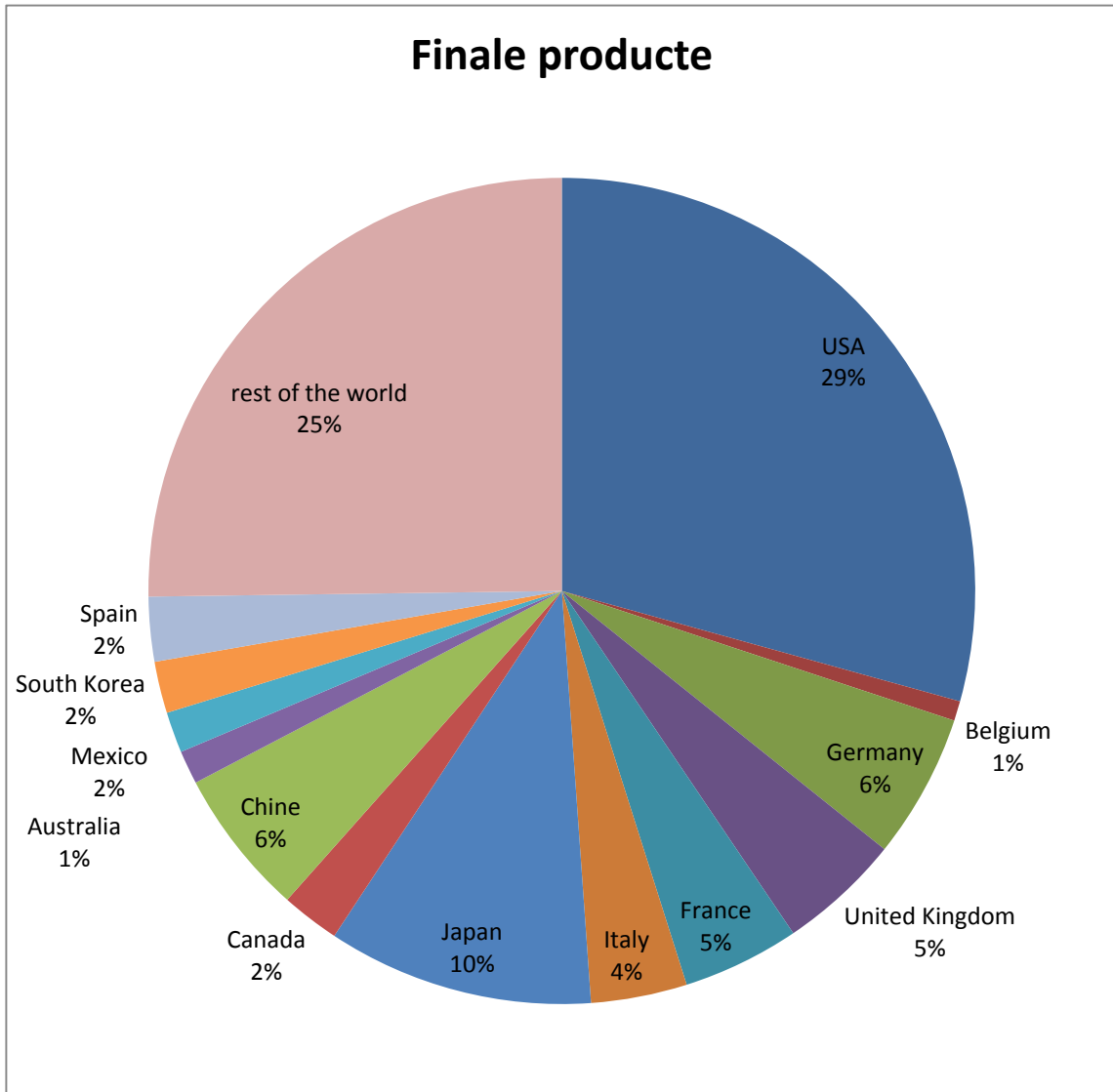
**Table 2.** The structure of the final products in these countries, for 2005, millions in U.S. dollars<sup>4</sup>

	Households Final Consumption HHFC	Non-Profit Institutions Serving Households NPISH	General Government Final Consumption GGFC	Gross Fixed Capital Formation GFCF	Changes in Inventories CHINV	Valuables VLBL	Net Export	Discrepancy DISC
USA	8694113.60	0.00	1959439.70	2440561.70	0.00	43366.80	-713043.30	-587.00
Belgium	168399.80	3994.20	85511.50	69246.30	4369.40	0.00	14398.40	-10348.20
Germany	1442756.10	45080.30	518604.20	452743.40	-9277.20	0.00	141471.40	-71356.30
United Kingdom	1284262.00	56043.80	487434.50	359947.50	8392.90	-685.50	-92077.50	-73041.20
France	1061591.70	28408.70	507011.40	394688.30	6928.10	1012.30	-18501.80	-56353.80
Italy	931705.90	6641.30	360706.90	351449.20	-3333.90	2079.80	-4402.00	-47518.10
Japan	2679256.50	57042.70	709355.90	1058913.20	16061.20	0.00	12517.30	0.10
Canada	556107.70	15183.00	214725.50	230457.00	8129.20	0.00	35505.90	
Chine	881426.40	0.00	329280.40	956766.30	41356.20	0.00	120013.10	-23636.10
Australia	349039.50	0.00	119484.50	160321.40	3677.60	0.00	-17663.50	
Mexico	442179.40	0.00	107682.80	132197.40	27688.60	0.00	-41910.60	-3941.70
South Korea	454673.20	0.00	117183.60	244302.30	5329.60	0.00	10427.60	0.00
Spain	575290.50	10007.20	203011.70	303997.20	1096.90	0.00	-59576.90	-21818.20

Source <http://stats.oecd.org/Index.aspx>

*Figure 2.* The structure of the final products in these countries, in %

<sup>4</sup> as there is no relevant information on Cyprus and Malta, these countries are not included in the table.



As we can see from the Figure 2, the major portion in Final total product of the world belongs to USA (29%) and the least portion from these countries to Luxembourg.

The Input Output layout was adapted to mutual relationship between 13 countries of the world. Notice that this time some changes appeared in indicators of different countries. (Table 1).

#### 4. Realization of the models and results

Input-Output simulation models have been realized with initial coefficients (1), (2), (5), (9), (13) given in the Table 1 and Table 2.

**Table 3.**

Countries	Coefficient		
	The share of final product in general output, %	Standards of Added-value to principal prices	Direct labor capacity coefficients (t)-persons-year/millions of dollars
	C/X	(v)	L/X
USA	55.22823179	0.536692506	6.122532035
Belgium	43.27314199	0.428511959	5.408317569
Germany	48.89859239	0.498838084	7.23823605
United Kingdom	50.9362647	0.494582031	7.497134799
France	51.52074475	0.497165491	6.327622179
Italy	47.23113744	0.459948099	6.496976083
Japan	53.21275654	0.531548834	7.452933832
Canada	48.9590117	0.518540626	7.943813939
Chine	37.13093317	0.340651211	112.05018
Australia	45.10321358	0.475768966	7.848205378
Mexico	60.4562857	0.576477222	35.42052836
South Korea	43.72627615	0.411822729	11.31438379
Spain	50.05606546	0.460010844	8.624327172
rest of the world	41.34160894	0.442833209	33.95449226
Total	47.92737386	0.479273739	23.01246521



**Table 3.** The table of the mutual relationship balance (Output - Input) between these countries, 2005, million in US dollars.

Countries	USA	Belgium	Germany	United Kingdom	France	Italy	Japan	Canada	Chine	Australia	Mexico	South Korea	Spain	rest of the world	Total product used for intermediate consumption	Final Product	Gross Output	Number of employees, thousand persons
USA	9750769.4	14202.0	76410.2	39960.3	26433.8	14694.1	62449.6	118978.1	38212.7	9640.2	96791.3	30978.9	10212.4	74447.4	10364180.5	12784738.8	23148919.3	141730.0
Belgium	8813.1	233865.4	23048.3	12236.1	26674.9	10086.2	1749.2	730.8	2966.8	446.5	492.1	762.8	4827.3	117533.4	444232.9	338875.7	783108.6	4235.3
Germany	48312.9	27940.5	1930694.4	38478.2	51153.5	37508.2	11481.0	4529.1	17976.3	2916.2	5777.0	6904.3	26035.4	371825.3	2581532.4	2470250.9	5051783.3	36566.0
United Kingdom	42688.5	18380.7	45815.5	1733950.8	22845.4	16844.4	8493.0	7812.2	5097.9	3548.6	1249.6	2589.0	17252.4	87515.4	2014083.5	2090951.4	4105034.9	30776.0
France	21263.3	24566.6	71646.8	28117.1	1617779.4	26622.6	5356.4	2465.3	7449.2	1154.4	1891.0	1982.0	27535.8	39052.8	1876882.9	1994634.6	3871517.5	24497.5
Italy	16406.3	7078.4	53658.9	14732.9	25138.8	1606920.9	3230.9	1998.0	4003.9	1288.6	1821.4	1579.9	14127.0	80595.5	1832581.5	1640264.9	3472846.4	22563.0
Japan	68392.6	3797.4	14839.2	10354.8	6588.7	3005.5	3597161.8	6037.8	72855.7	3950.6	8336.1	34669.2	3304.1	156809.3	3990102.8	4538082.4	8528185.2	63560.0
Canada	177721.0	1146.2	3652.5	5675.8	2945.4	1822.2	7549.2	779382.8	6662.9	940.4	4065.8	2511.0	1045.3	43823.2	1038943.6	996564.8	2035508.4	16169.7
Chine	66614.2	3401.0	14780.2	8900.7	7575.3	6865.0	43742.5	6900.8	3920364.4	4633.0	9226.4	26133.7	4511.8	130736.9	4254385.8	2512671.6	6767057.4	758250.0
Australia	5575.6	1078.9	1680.3	4556.8	1334.4	1622.7	22973.4	1215.2	16506.1	603004.7	697.1	9545.9	755.3	26737.8	697284.0	572888.8	1270172.8	9968.6
Mexico	91053.7	560.8	1299.9	965.9	961.2	481.1	1519.7	6400.9	1736.4	290.2	332746.7	275.2	3635.3	13475.4	455402.4	696240.5	1151642.9	40791.8
South Korea	20400.5	890.9	5702.9	1862.9	1606.4	1239.7	17856.7	1696.4	58942.6	1230.3	4706.8	965774.0	709.5	54156.5	1136776.2	883307.3	2020083.5	22856.0
Spain	8135.8	4672.2	19979.9	18521.6	18524.7	9147.2	1068.1	685.6	1376.3	416.7	2322.2	314.8	986505.3	27079.6	1098749.8	1101216.6	2199966.4	18973.2
rest of the world	398920.9	105956.2	268552.3	156444.5	137170.7	138657.5	210406.8	41181.5	307699.9	32403.5	17623.5	104146.6	87501.3	13604069.5	15610734.6	11002226.2	26612960.8	903629.6
Intermediate consumption (total )	10725067.8	447537.2	2531761.4	2074758.4	1946732.6	1875517.3	3995038.3	980014.6	4461851.1	665864.0	487747.0	1188167.2	1187958.0	14827858.0	47395872.9	43622914.5	91018787.4	2094566.0
Added value to basic prices	12423851.5	335571.4	2520021.9	2030276.5	1924784.9	1597329.1	4533146.9	1055493.8	2305206.3	604308.8	663895.9	831916.3	1012008.4	11785102.8	43622914.5			
Gross domestic product	12423851.5	345852.8	2591378.2	2103317.1	1981137.0	1644847.4	4533146.9	1060108.3	2305206.3	614860.6	667837.5	831916.3	1033826.8	13607464.2	45744750.9			
Gross output	23148919.3	783108.6	5051783.3	4105034.9	3871517.5	3472846.4	8528185.2	2035508.4	6767057.4	1270172.8	1151642.9	2020083.5	2199966.4	26612960.8	91018787.4			

Source: <http://stats.oecd.org/Index.aspx>

**Table 4**

Influence of the changing of final product in USA equal to 1 per cent, on the volume of general output, Value-added and work places in other countries.

Countries	Initial variable of the model		The results of the model						
	The change of final product		The change of general output		Multiplikator	The change of value-added		The change in number of employees	
			%	million dollars		%	million dollars	%	Person year
USA	1	127847.39	0.9568431	221498.8	1.732525265	0.9568431	118876.76	0.9568431	1356133.7
Belgium	0	0	0.0248576	194.7	0.0015222614	0.0248576	83.415064	0.0248576	1052.7948
Germany	0	0	0.0201619	1018.5	0.007966803	0.0201619	508.08403	0.0201619	7372.3964
United Kingdom	0	0	0.0199066	817.2	0.006391794	0.0199066	404.15968	0.0199066	6126.4652
France	0	0	0.0113673	440.1	0.003442278	0.0113673	218.79567	0.0113673	2784.6992
Italy	0	0	0.0112102	389.3	0.003045145	0.0112102	179.06414	0.0112102	2529.3624
Japan	0	0	0.0153363	1307.9	0.010230211	0.0153363	695.21579	0.0153363	9747.7351
Canada	0	0	0.1373503	2795.8	0.021868086	0.1373503	1449.7243	0.1373503	22209.138
Chine	0	0	0.0252806	1710.8	0.013381216	0.0252806	582.77024	0.0252806	191690.23
Australia	0	0	0.0114132	145.0	0.001133908	0.0114132	68.970913	0.0114132	1137.7327
Mexico	0	0	0.1082182	1246.3	0.009748245	0.1082182	718.45643	0.1082182	44144.166
South Korea	0	0	0.0227572	459.7	0.003595805	0.0227572	189.32079	0.0227572	5201.3838
Spain	0	0	0.0084586	186.1	0.001455539	0.0084586	85.601965	0.0084586	1604.8738
rest of the world	0	0	0.0321342	8551.9	0.06689115	0.0321342	3787.0471	0.0321342	290374.02
Total		127847.39	0.264519	240762.0	1.883198058	0.264519	115390.88	0.264519	5540526.1

As we can see from the table 4, growth of final product equal to 1 % in USA (approximately 127 billion's of dollar) results in growth of total product output in USA equal to 0,9 % and in Canada equal to 0,14 %, in Mexico equal 0.11%, in Belgium, Germany, United Kingdom, Japan, Chine, South Korea equal about 0.02 % and in other countries equal about 0.01%. Thus, final product expenses make multiplicative effect equal to 1.7 in USA (this means that final product expenses equal to 1 dollar, increases total output volume to 1.7 dollars) and equal to 0,02 – in Canada, equal to 0,01 – in Japan, equal to 0,013 – in Chine. In other countries multiplicative effect less than 0.01. Value-added product's volume grows to 0,95%-in USA and to 0,14 %- in Canada , to 0,11 %- in Mexico, to 0,02 %- in Belgium, Germany, United Kingdom, Japan, Chine, South Korea and to 0,01 %- in other countries. We can see from the last column of the table 4 that expense equal to 127 billion's of dollar in USA, creates approximately 5540 thousand of new work places (persons-year) in the world.

**Table 5**

Influence of the changing of final product in Germany equal to 1 per cent, on the volume of general output, Value-added and work places in other countries.

Countries	Initial variable of the model		The results of the model						
	The change of final product		The change of general output		Multiplikator	The change of value-added		The change in number of employees	
	%	million dollars	%	million dollars	The change of general output/ the change of final demand	%	million dollars	%	Person year
USA	0	0	0.0049169	1138.2018	0.046076363	0.0049169	610.86436	0.0049169	6968.6768
Belgium	0	0	0.0396121	310.20603	0.012557673	0.0396121	132.92699	0.0396121	1677.6927
Germany	1	24702.509	0.7951784	40170.689	1.6261785	0.7951784	20038.67	0.7951784	290764.93
United Kingdom	0	0	0.0170114	698.32533	0.028269409	0.0170114	345.37916	0.0170114	5235.4391
France	0	0	0.0267868	1037.0574	0.041981864	0.0267868	515.58914	0.0267868	6562.1072
Italy	0	0	0.0244742	849.95002	0.034407436	0.0244742	390.93289	0.0244742	5522.1049
Japan	0	0	0.003293	280.83003	0.011368482	0.003293	149.27487	0.003293	2093.0076
Canada	0	0	0.0039293	79.980693	0.003237756	0.0039293	41.473238	0.0039293	635.35174
Chine	0	0	0.0054505	368.83816	0.014931202	0.0054505	125.64516	0.0054505	41328.382
Australia	0	0	0.0034159	43.388337	0.001756434	0.0034159	20.642824	0.0034159	340.52058
Mexico	0	0	0.0023142	26.650889	0.001078874	0.0023142	15.363631	0.0023142	943.98858
South Korea	0	0	0.0058444	118.06097	0.004779311	0.0058444	48.620192	0.0058444	1335.7872
Spain	0	0	0.0145511	320.12014	0.012959013	0.0145511	147.25874	0.0145511	2760.8208
rest of the world	0	0	0.0179877	4787.0581	0.193788334	0.0179877	2119.8683	0.0179877	162542.13
Total		24702.509	0.0551857	50229.357	2.03337065	0.0551857	24073.612	0.0551857	1155901.3

As we can see from the table 5, growth of final product equal to 1 % in Germany (approximately 24 billion's of dollar) results in growth of total product output in Germany equal to 0,8 % and in Belgium equal to 0,04 %, in France equal 0.03%, in UK and Italy equal to 0.02%, in Spain equal about 0.01 % and in other countries less than 0.01%. Thus, final product expenses make multiplicative effect equal to 1.6 in Germany (this means that final product expenses equal to 1 dollar, increases total output volume to 1.6 dollars) and equal to 0,04 – in USA and France, equal to 0,03 – in UK and Italy, equal to 0,01 – in Belgium, Japan, Chine and Spain. In other countries multiplicative effect less than 0.01. Value-added product's volume grows to 0,8%-in Germany and to 0,04 %- in Belgium, to 0.03%- in France, to 0,02 %- in UK and Italy and to 0,01 %- in Spain. We can see from the last column of the table 5 that expense equal to 24 billion's of dollar in USA, creates approximately 1155 thousand of new work places (persons-year) in the world.

In general, if we compare appropriate figures of the table 4 and table 5, we will find out that multiplicative effect of expenditures is higher in Germany (2 – over the world) than in USA (1.8 – over the world). The reason is that the transitional consumption costs for each unit product are higher in Germany than in USA (appropriately 0,463 and 0,501). As products, which are produced in Germany are more labour-intensive in comparison with USA, each unit expenditure in Germany creates more work places.

Now, let's use model (4) in order to analyze how changes in level of prices in one country influence on the prices in others countries.

**Table 6**

Reciprocal influence of prices in these countries.

Countries	Input The change of value-added standard, %	Output The changing of prices' level, %	Input The change of value-added standard, %	Output The changing of prices' level, %	Input The change of value-added standard, %	Output The changing of prices' level, %
USA	5,000	8,663	0,000	0,040	0,000	0,051
Belgium	0,000	0,267	0,000	0,481	0,000	0,092
Germany	0,000	0,230	5,000	8,131	0,000	0,057
United Kingdom	0,000	0,162	0,000	0,157	0,000	0,050
France	0,000	0,120	0,000	0,211	0,000	0,037
Italy	0,000	0,085	0,000	0,190	0,000	0,027
Japan	0,000	0,118	0,000	0,032	5,000	8,657
Canada	0,000	0,832	0,000	0,044	0,000	0,053
Chine	0,000	0,138	0,000	0,083	0,000	0,242
Australia	0,000	0,135	0,000	0,051	0,000	0,061
Mexico	0,000	1,037	0,000	0,071	0,000	0,102
South Korea	0,000	0,275	0,000	0,084	0,000	0,305
Spain	0,000	0,095	0,000	0,204	0,000	0,037
rest of the world	0,000	0,069	0,000	0,242	0,000	0,112
Total	1,272	6,881	0,278	5,330	0,468	5,575

Observations on the base of the table 6 on balanced prices model indicate that, growth of value-added standard (v) equal to 5 % in USA, leads to increase in level of prices in USA (p) approximately to 8.6%, in Germany to 0.23 % and in Japan to 0.12% . In other words, inflation rate equal to 8.6 % in USA, results in inflation rate equal to 0.23 % in Germany, to 0.12 % in Japan and to 6.9% in the world. On the contrary, growth of value-added standard in Germany equal to 5,0 % results increases prices in Germany to 8.1 %, in USA 0.04%, in Japan to 0,03% and in Belgium to 0.5%.

It is known that, there is financial-economic crisis in one country and this crisis has impact on other countries' economy. Quantaty of the impact these countries mutual relationship will be determined according to Output Input model. (Table 7)

**Table 7**

The impact of 2.5 percent reduction of Final Demand of USA on the other countries' gross output, Final demand and changin number of workplaces.

Country	Changing of the toatal output, million dollars	Changing of GDP, million dollar	Changing the number of employees, person, year
Belgium	-486.6554032	-214.9269384	-2631.986967
Germany	-2546.337393	-1306.177011	-18430.99111
United Kingdom	-2042.935514	-1046.749006	-15316.16294
France	-1100.215516	-563.0034389	-6961.748099
Italy	-973.2844829	-460.9776151	-6323.406007
Japan	-3269.764415	-1738.039463	-24369.33783
Canada	-6989.444149	-3640.155823	-55522.84385

Chine	-4276.883636	-1456.925591	-479225.5814
Australia	-362.4180975	-175.4380261	-2844.331662
Mexico	-3115.719049	-1806.804888	-110360.4149
South Korea	-1149.285699	-473.3019732	-13003.45948
Spain	-465.2171051	-218.618753	-4012.18452
rest of the world	-21379.6471	-10931.62026	-725935.062
Total	-601904.8823	-302508.8519	-13851315.16

We can see from the Table 7, 2,5 % decreasing of final demand of USA how influence to the main indicators of these countries. 2,5 % decreasing of final demand of USA led to decreasing of the world's gross output 601.9 billion dollars and GDP 302.5 billion and it was the reason of decreasing of work places 13.8 millions. It was also determined that (according to models "Balanced prices" attachment of Output- Input model) if the inflation rate in USA will be 3% in this case inflation rate will be 2,3 % in the world.

Thus, in order to reduce negative impacts of Eurozone's financial-economic crises on Great Britain economy, following suggestions can be offered:

- Increasing of domestic products in intermediate consumer goods;
- Decreasing of import of intermediate consumer goods from USA;
- Increasing of export of final consumer goods to USA and different countries;
- Increasing of part of intermediate consumption in gross output in order to reduce domestic inflation pressure;
- Products in the sectors with high multiplicative effect, direct and full cost coefficients (direct labor intense and full labor intense coefficients) should be stimulated in order to increase volume of goods and decrease unemployment.

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