Sierz Naurodski
Uladzimir Valetka

COMPARATIVE PERFORMANCE OF BELARUSIAN INDUSTRIES: THE LENS OF ECONOMIC VALUE ADDED (EVA)

Introduction.

Growth itself does not create value. Economic value is created by investment in excess return compared to its cost. This statement is one of the central in microeconomic theory and drives the development of a single firm through an industry to a country's economy. Principle of economic value added to invested capital is directly employed in Economic Value Added (EVA) indicator.

In this article we make the first attempt to calculate EVA for Belarus at the industry level using aggregate indicators according to the common methodology. In our case primary data such as net economic profit, investment and cost of capital are aggregates for each sector defined in internationally comparable Industrial Classification System only recently built in Belarus.

1. EVA general approach

The theory of Economic Value Added has traditionally suggested that every company's primary goal is to maximize the wealth of its shareholders, which should be a given since it is the shareholders that own the company and any sensible investor expects a good return on his or her investment. In the past, however, other methods such as Return on Investment (ROI) and Earnings Per Share (EPS) have been the most important performance measurement systems and have been used in determining bonus-based incentives even though they do not correlate well with shareholder value creation.

Economic Value Added (EVA) is probably the most widely used approach to measuring value-creation. The analytical tool called EVA, for Economic Value Added, was commercially developed in 1982 by the corporate advisory team of Joel Stern (Stern, 2001). Stern Stewart, a major consulting firm holds the registered trademark for EVA©.

Large firms like Coca Cola, Diageo, Lilly (Eli), Guidant, and SPX have used EVA as a guide to creating economic value for their shareholders (Grant, 2003). Bonuses and incentive pay schemes at these firms have been built around the manager's ability (or lack thereof) to generate positive EVA within the firm's operating divisions. Positive payments accrue to managers having

divisional operating profits that on balance exceed the relevant "cost of capital," while negative incentive payments may occur if the longer-term divisional profits fall short of the overall capital costs. Thus, by accounting for both the cost of debt and equity capital, EVA gives managers the incentive to act like shareholders when making corporate investment decisions.

EVA is also gaining popularity in the investment community. Since June 1996 Conference on "Economic Value Added" at CS First Boston "buy side" investment firms like Global Asset Management and Oppenheimer Capital use EVA in their stock selection, portfolio construction, and risk control processes (Grant 2003, p. 2).

Economic Value Added is most generally calculated as the difference between net operating profit after tax (NOPAT) less market money value of capital invested (MVC):

$$EVA = NOPAT - MVC$$

The crucial point of EVA estimating is calculating the market money value of invested capital:

$$MVC = \text{Weighted Average Cost of Capital (\%)} * \text{Capital Invested.}$$

Since firms use both private equites (E) and debt (D) to finance their investment projects, it is important to use the wieghted structure of cost of capital:

$$WACC = \%D * \text{Cost of Debt} + \%E * \text{Return on Equity}$$

where *%D – share of debt invested in project; %E – share of equities invested in project; and %D + %E = 1*

The calculation of EVA gives the same mathematical results as Discounted Cash Flow (DCF) or Net Present Value (NPV), both of which have historically been deemed the best analysis tools for determining shareholder value. However the equivalence with EVA and NPV/DCF holds only in valuation and not in performance measurement.

EVA is expressed as money value in currency of operation of a certain company. It estimates what amount of value is added to the invested capital. This value usually results in higher net economic profit of a firm and higher devidends. Negative EVA indicates that either i) cost of capital is higher than return on capital (the firm is currently earing less than expected giving the its cost cost of capital) or ii) capital invested does not create enough of value for specific investment projects.

The idea behind EVA is rooted in economic income as opposed to accounting income. As economic income moves up or down, so goes the value of the business. The problem is that calculating economic income is not easy; it requires many adjustments. For example, under traditional accounting we would expense cash disbursed for research and development (R & D), but in arriving at economic income we would capitalize R & D since it provides a future economic benefit. The list of adjustments from accounting to economic is extensive: depreciation, gains / losses, reserves, deferred taxes, etc. Since EVA is at the center of Value Based Management, it is important to keep the number of adjustments to those material items that significantly distort value. This is important since managers throughout the entire organization will need to understand how EVA is calculated. Keeping EVA simple will go a long way towards successful implementation.

EVA indicator of a firm is even more informative when considered in dynamic over certain period of time. Increasing EVA indicates either lower cost of capital, or higher returns (provided invested capital is the same over considered period). Diminishing EVA points to higher cost of capital or lower profit (if invested capital is the same over considered period).

In this article we are interested to calculate EVA at the industry level in Belarus using aggregate indicators according to the common methodology as described above. In this case cost of capital, both debt aquired and private equity invested, is averaged for each sector.

2. EVA advantages, limitations and adoptation for Belarus

Among EVA advantages the most important to mention are the following:

i) simplicity – EVA is relatively simple indicator provided market (not book) information is available for cost of capital and return on capital. It is important to use market information in order to eliminate the practicies of unfaire book-keeping and statistical fraud;

ii) industry specificity – EVA results are logically connected to specific operating conditions for a firm or an industry by considering debt and equity share in capital structure as well as specific risk premium for each industry.

There are certain limitations however when calculating EVA. In case of start up business, huge capital investment (e.g. buying expensive machines), and long-term investment (e.g. infrastructure investment) EVA can be highly negative number. This happens because in short run due to rapid increase in debt cost of capital will be much higher than return on capital.

EVA indicator can be adopted to Belarusian reality and available statistics by adjusting return on investment and cost of capital. Peculiarities of EVA calculation in Belarus are caused by specifics of aggregate sector data we use as well as by general economic conditions in Belarus.

Structure of capital invested. In Belarus investment are cereated not only by private equities and loans, but also by government subsidies. The latter source is particular important in the industries with dominating number of state-owned enerprises. Because of the problem of estimating the cost of government source of investment, in our calculations we included government subsidies into private equities with the expected return of subsidies equal to return of private equities.

Market value of equity (equity ratio). When estimating the weighted-average cost of capital, we are not interested in past investments but in current values and expectations for the future. This means the book ratio is not good for our purpose. But to reveal true debt ratio we need to know market value of assets. For healthy firms the market value of debt is usually not too far from book value, so many managers and analysts use book value for D in the WACC formula. However, we should for sure use market, not book, values for E. In case of Belarusian sector's we cannot obtain market information when estimating risk and returns, and can only estimate the share of equities by substracting share long-term debt and short-term liabilities share from total of capital invested.

Expected market returns for private equities. It is normally calculated using betas, risk premium and risk free rate for a certain industry a firm operates in. For Belarus we use the logic of best alternative return on capital invested in the country. Such proxy in our calculations is the average interest rate for long-term deposits in Belarusian banks.

Short-term liabilities. If lending and borrowing offset, there is no point in including the cost of short-term debt in the WACC, because the company is not a net short-term borrower. According to Brealey and Myers (2003, p. 528), there is a rule of thumb for deciding whether short-term debt is worth including in the weighted-average cost of capital. For example, when short-term debt is 10 percent of total liabilities and net working capital is negative, then short-term debt is almost surely being used to finance long-term assets and should be explicitly included in WACC. In Belarus the majority of enterprises are net short-term borrowers with negative working capital. That is why the interest cost of short-term debt is an element of the weighted-average cost of capital in our calculations.

3. EVA estimation in Belarus

We belive that calculating and understanding real economic value of growth is of huge importance for Belarus. EVA can be used as a qualitative indicator of growth at the level of industries and economy at general.

First, qualitative indicator of investment among firms in different sectors, like EVA, better illustrates potential of economic developement unlike gross

macroeconomic indicators of output. Gross economic indicators seem to be at the center of attention for government decision makers in Belarus resulting in economic policy of stimulation of output. Instead, authorities should be concerned with the question whether growth of output was achieved due to growing productivity or lower costs of capital. According to our knowledge the issue of quality of growth is still at the margin of the governmental decision-makers‘ attention in Belarus.

Second, calculating EVA for industries, the structure of economy can become more clear revealing best peforming and worst performaing sectors in terms of their economic value added. In practice one can break down the economy into sectors with high EVA and little EVA for both positive and negative indicators. After close look at each of the best or worst performing sector taking into account their specifics recommendations for using high poteintial or improving sector’s conditions might be drawn.

Third, EVA allows to watch development of industries and a country’s economy in dynamic over chosen period of time. For instance, growing EVA for a country’s economy might indicate its growing potential of further development and sustainability. Alternatavely, diminishing EVA in chosen industry might be a signal for poor quality of investments, inadequate structure of capital invested or poor mamagement.

Fourth, using EVA as performance indicator of economic sectors defined according to industrial classification system as apposed to traditional Soviet Union type division we get a possibility to make international comparisons.

Finally, economic value added (EVA) indicator calculated for Belarusian industries provides us with objective information about current situation at the market when no stock exchange information is available.

4. Results and discussion

Basic indicators for Belarusian industries according to NACE are presented in table 1. One should notice that Section L “Public administration and defence; compulsory social security” is absent because official Belarusian NACE statistics does not contain any data on that sector [9].

Final EVA results. After consiquent calculations according to the methodolgy and specifics discussed above final EVA data looks as presented in the table (ranked by diminishing EVA):

Table 1. Basic indicators for Belarusian industries according to NACE

NACE code	Economic activity	Number of enterprises		Production		Employment		Investment		Foreign investment		Net profit		
		units	%	bln. BYR	%	th.	%	bln. BYR	%	th. USD	%	2007, bln. BYR	2008, bln. BYR	- 2008%
A	Agriculture, hunting and forestry	3 821	5,6	16 100	8,1	447 761	11,1	5 805	15,6	33 627	0,5	1 129	2 011	11,1
B	Fishing	102	0,1	91	0,0	2 244	0,1	20	0,1	267	0,0	8	4	0,0
C	Mining and quarrying	48	0,1	1 639	0,8	21 857	0,5	735	2,0	350 016	5,4	345	511	2,8
D	Manufacturing	11 520	16,8	100 133	50,3	1 035157	25,7	8 348	22,4	2 198 318	33,7	4 786	8 274	45,5
E	Electricity, gas and water supply	208	0,3	16 008	8,0	120 891	3,0	2 667	7,2	242 143	3,7	333	353	1,9
F	Construction	5 781	8,5	18 424	9,3	329 023	8,2	1 711	4,6	49 633	0,8	618	1 119	6,2
G	Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	28 253	41,3	17 573	8,8	431 158	10,7	1 628	4,4	2 454 591	37,6	1 017	2 687	14,8
H	Hotels and restaurants	1 361	2,0	1 509	0,8	87 882	2,2	199	0,5	13 414	0,2	40	54	0,3
I	Transport, storage and communication	6 386	9,3	15 764	7,9	321 543	8,0	4 264	11,5	681 678	10,4	1 235	2 076	11,4
J	Financial intermediation	262	0,4	1 632	0,8	66 771	1,7	411	1,1	218 818	3,4	316	114	0,6
K	Real estate, renting and business activities	6 871	10,0	7 226	3,6	241 584	6,0	8 081	21,7	251 169	3,8	543	852	4,7
M	Education	444	0,6	371	0,2	459 638	11,4	484	1,3	162	0,0	16	22	0,1
N	Health and social work	663	1,0	507	0,3	311 504	7,7	872	2,3	594	0,0	8	20	0,1
O	Other community, social and personal service activities	2 679	3,9	2 137	1,1	149 910	3,7	1 628	4,4	31 429	0,5	73	78	0,4
	Total	68 407	100	199 118	100	4187554	100,0	37 202	100	6 525 857	100	10 466	18 175	100

Note. Section L “Public administration and defence; compulsory social security” is excluded from official NACE statistics.

Table 2. EVA results for Belarusian industries according to NACE

No	NACE code	Industry	EVA, BYR bn	% to total
		Total	**13913.6**	100.0%
1	DG	Manufacture of chemicals, chemical products and man-made fibres	3217.4	23.1%
2	51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	1723.1	12.4%
3	I	Transport, storage and communication	1588.9	11.4%
4	1	Agriculture, hunting and related service activities	1300.4	9.3%
5	F	Construction	923.3	6.6%
6	DF	Manufacture of coke, refined petroleum products and nuclear fuel	799.8	5.7%
7	DK	Manufacture of machinery and equipment n.e.c.	666.2	4.8%
8	DJ	Manufacture of basic metals and fabricated metal products	614.3	4.4%
9	DM	Manufacture of transport equipment	455.3	3.3%
10	C	Mining and quarrying	427.0	3.1%
11	50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	404.0	2.9%
12	52	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	371.0	2.7%
13	DI	Manufacture of other non-metallic mineral products	349.3	2.5%
14	DN	Manufacturing n.e.c.	311.2	2.2%
15	74	Other business activities	309.8	2.2%
16	DL	Manufacture of electrical and optical equipment	279.3	2.0%
17	DA	Manufacture of food products, beverages and tobacco	273.3	2.0%
18	72	Computer and related activities	100.1	0.7%
19	DB	Manufacture of textiles and textile products	99.5	0.7%
20	DH	Manufacture of rubber and plastic products	86.0	0.6%
21	DE	Manufacture of pulp, paper and paper products; publishing and printing	69.8	0.5%
22	J	Financial intermediation	66.9	0.5%
23	DC	Manufacture of leather and leather products	51.1	0.4%
24	E	Electricity, gas and water supply	47.2	0.3%
25	DD	Manufacture of wood and wood products	40.5	0.3%
26	73	Research and development	34.0	0.2%
27	H	Hotels and restaurants	30.9	0.2%
28	2	Forestry, logging and related service activities	18.5	0.1%
29	71	Renting of machinery and equipment without operator and of personal and household goods	11.2	0.1%
30	B	Fishing	1.8	0.0%
31	M	Education	-33.7	-0.2%
32	N	Health and social work	-80.5	-0.6%
33	O	Other community, social and personal service activities	-108.7	-0.8%
34	70	Real estate activities	-530.3	-3.8%

A few important conclusions can be drawn according to EVA estimation results for Belarusian industries:

i) six industries created in 2008 more than 2/3 of economic value added in Belarusian economy: manufacture of chemicals, whlesale trade, transport and communication, agriculture, construction and manufacture of refined petroleum products and coke. Evidently these six industries contributed substantially to overall economic performance in Belarus in 2008.

ii) almost ¼ of the entire economic value was added in 2008 in chemical industry (manufacture of chemicals, chemical products and man-made fibres). We can state that comparing to other sectors enerprises in chemical devision invested in more profitable projects. This leading value-creating industry played then the most important role in Belarusian economy in 2008. In Belarus there are quite big enterprises prodicing fertilizers, fibers, basic organic and inorganic chemicals, detergents and paints. A deeper look would give more detailed picture on which sub-

industries contributed substantially to creation of economic value in chemical industry according to NACE classification.

iii) four sectors create no economic value and have negative EVA indicator: education, health, community, social and personal services, and, suprisingly, real estate activities. Such negative EVA indicates that either cost of capital for an industry is higher than return on capital (the firms are currently earing less than expected giving the their cost cost of capital) or capital invested does not create enough of value for specific investment projects. The first three mentioned sectors have clear „social“ charakter in Belarus by recieving substantial governmental support and subsidies. We can state that these sectors and real estate operate „at the cost“ of other industries.

iv) The most striking finding of our estimations is that the lowest EVA indicator among all Belarusian industries shows the division called „Real estate acvtivities“. This can be explained by having a close look at the sector's further structure. According to NACE „Real estate activities“ behind direct services of selling estate and real estate agencies includes also management of estate on a fee or contract basis, the services of numerous halls of residence. In Belarus the latter are simply maintanace services for housholds which is traditionally low-profitable and government-subsided. A governmental straight involvment in construction sector production, providing of preferential rates for housing construction credits and other economic peculiarities in Belarus have led to unexpected result that firms from a should-be profitable NACE class „Development and selling of real estate" does not create economic value.

Ranking of indistries. Finding the "best" companies and industries in the marketplace is of primary importance to investment managers. With the proper financial tools, portfolio managers may be able to enhance their active performance over-and-above the returns available on similar risk indexed-passive strategies. We developed initial approach of ranking of Belarusian industries to assist potential foreign investors in Belaurs in their estimation of development potential of a chosen sector.

Our industry rank is based on the three indicators:

i) share of industry EVA in total economy EVA is used as indicator of industry's role in the economy (weight is equal to 0.3);

ii) EVA/ Employment ratio estimates efficiency of human resources on one hand and technological advance on the other (wieght is equal to 0.3);

iii) EVA/Invested Capital ratio is used to reflect level of profitability of industries (wieght is equal to 0.4).

All indicators are normalized and final ranking is calculated using weights set by our own estimation:

Table 3. Ranking of Belarusian industries based on investor-attractiveness criteria

Rank	NACE Code	Industry	Final indicator
1	DF	Manufacture of coke, refined petroleum products and nuclear fuel	8.47206
2	DG	Manufacture of chemicals, chemical products and man-made fibres	7.07281
3	50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	3.41536
4	51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	3.36324
5	DC	Manufacture of leather and leather products	2.53167
6	72	Computer and related activities	2.43755
7	C	Mining and quarrying	2.39444
8	DJ	Manufacture of basic metals and fabricated metal products	2.09230
9	DN	Manufacturing n.e.c.	1.95242
10	DM	Manufacture of transport equipment	1.86900
11	DK	Manufacture of machinery and equipment n.e.c.	1.41604
12	DL	Manufacture of electrical and optical equipment	1.20462
13	71	Renting of machinery and equipment without operator and of personal and household goods	1.11370
14	74	Other business activities	0.99707
15	I	Transport, storage and communication	0.87896
16	F	Construction	0.85030
17	52	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	0.80344
18	DI	Manufacture of other non-metallic mineral products	0.77757
19	1	Agriculture, hunting and related service activities	0.56974
20	DH	Manufacture of rubber and plastic products	0.48063
21	DB	Manufacture of textiles and textile products	0.45437
22	DE	Manufacture of pulp, paper and paper products; publishing and printing	0.44625
23	DA	Manufacture of food products, beverages and tobacco	0.33976
24	DD	Manufacture of wood and wood products	0.30609
25	73	Research and development	0.27150
26	J	Financial intermediation	0.26637
27	H	Hotels and restaurants	0.19839
28	B	Fishing	0.17347
29	2	Forestry, logging and related service activities	0.13940
30	E	Electricity, gas and water supply	0.05524
31	M	Education	-0.08172
32	N	Health and social work	-0.12387
33	O	Other community, social and personal service activities	-0.13926
34	70	Real estate activities	-0.63606

The ranking shows that top-10 investor attractive sectors in Belarusian economy are:

- Manufacture of coke and refined petroleum products;
- Manufacture of chemicals, chemical products and man-made fibres;
- Sale, maintenance and repair of motor vehicles and motorcycles;
- Wholesale trade and commission trade;
- Manufacture of leather and leather products;
- Computer and related activities;
- Mining and quarrying;
- Manufacture of basic metals and fabricated metal products;
- Manufacture of transport equipment.

The least attractive sectors are „social“ ones: education, health, community, social and personal services, and real estate activities.

Foreign investments. Following the results of industry ranking we are interested to see if there is a correlation between industry attractivness and

foreign investments into it. One should expect that industries with higher rank attract more foreign investors.

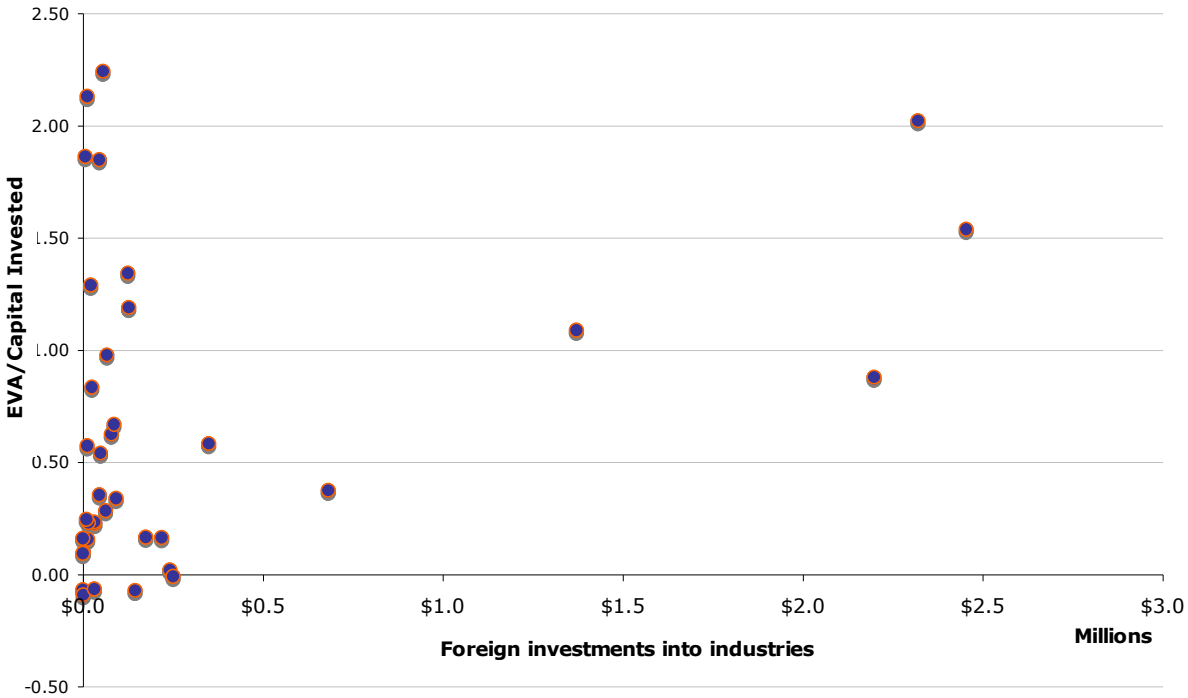
As a mesuare of attractivness we chose the industry's profitability measure used as a separate indicator in our ranking:

P = EVA/Capital Invested

This ratio can be also calculated as Net Return on Investment (NetROI):

NetROI = *ROI – Cost of Capital*
= *Profit/Capital Invested – Cost of Capital*

Grafic illustration of correlation between industry's profitability measure and attracted foreign investments looks as follows:



Apparently there is little or no correlations between foreign investments and profitability of a sector in Belarus today. The explanation can be one of the following:

i) either foreign companies when investing into Belarus put profitability in the decision making process behind other creteria (it can be access to market, export potential, outsourcing)

ii) or Belarus' government policy towards foreign investments attraction brings little result: target sectors are chosen wrongly during privatization

and followed by sale to a foreign company, by fiscal stimulus and by special operating conditions.

We strongly believe that the data obtained in both EVA and foreign investor attractiveness rankings may be hepful for both foreign investors and government in terms of making a propoer choice of sector in Belarus and creating investor-friendly conditions in the coutnry.

References

1. Brealey, R. A. Principles of corporate finance / R. A. Brealey, S. C. Myers. – 7th ed. – New York: McGraw Hill, 2003. – xxxii, 1071 p.
2. Damodaran, A. Equity Risk Premiums (ERP): Determinants, Estimation and Implications - A post-crisis Update – Stern School of Business, 2009. – 86 p.
3. Damodaran, A. Estimating Risk Parameters – Stern School of Business, 2009. – 31 p.
4. Grant, J. L. Foundations of Economic Value Added / J. L. Grant. – 2nd ed. – New Jersey: John Wiley & Sons, 2003. – xi, 324 p.
5. Stern, J. M. The EVA Challenge: Implementing Value Added Change in an Organization / J. M. Stern, J. S. Shiely. – Wiley, 2001. – 240 p.
6. Tirole, J. The theory of corporate finance / J. Tirole. – Princeton: Princeton University Press, 2006. – xii, 644 p.Бюллетень банковской статистики № 1 (115), НБРБ, 2009, 210 с.
7. Бюллетень банковской статистики № 5 (119), НБРБ, 2009, 271 с. http://www.nbrb.by/statistics/bulletin/
8. Общегосударственный классификатор Республики Беларусь : ОКРБ 005-2001. Виды экономической деятельности. – Введ. 01.03.2002. – Минск : Госстандарт.
9. Отдельные статистические показатели деятельности организаций Республики Беларусь по видам экономической деятельности за 2008 г. – Минск : Национальный статистический комитет Республики Беларусь, 2009. – 59 с.