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CONSTRUCTION AS A MODERATOR OF THE NATIONAL AND REGIONAL DEVELOPMENT

GRADITELJSTVO KAO MODERATOR GOSPODARSKOG RAZVITKA

ABSTRACT

All the frequent cries of our indigenous politicians for speeding up the necessary national and regional development are very weak or are not even scientifically or economically based. In conjunction with the desired development goals stand out as new jobs and reduce unemployment recent and potential relative growth of the gross domestic product, regardless of who contributed to this economic segment. Mentioned in this and the necessary structural changes, but does not define what it means under them, although due to the absence of global definitions are absent (a) knowledge of the real and the possible origin of the realized social product, and (b) knowledge about the possible impact on its partial and global growth. At the same time in the practice of developed countries, the social origin of products from certain segments of the economy has received much attention, these structures are carefully planned and initial measures of economic policy is consistently controlled and directed. Simplified terms, takes into account how much the gross domestic product within a national framework is realized in the industry, in agriculture or in construction and other economic sectors, and to take measures of economic policy that will, at any given time, heading to enable faster increase in the share of each economic segment in the domestic product.

Through the structure of the social origin of products on the international level to identify the level of recent development of a country or its region. Through measures of current and developing policies that directly affects the structure, causing acceleration or deceleration of development and the effects which it is measured. Common to all developed countries in this important moderator to consider economic development and construction as the economic field, because it is rooted in the research proved that the economic developments in this segment, with a time lag, always accelerating or slowing down the overall economic and social development of the product which the same extent.

Our recent specific-and desirable-relationship to the economy segment in general and global management at national and regional development, the contents of the paper is announced under the title "Construction as a moderator of the national and regional development." The stronghold of his research findings from long-term research project, Faculty of Engineering, University of Josip Juraj Strossmayer, "Long-term development of Croatian civil engineering."

SAŽETAK

Sve učestaliji vapaji naših domicilnih političara za neophodnim ubrzavanjem nacionalnog i regionalnog razvoja vrlo su slabo ili uopće nisu ni znanstveno ni ekonomski utemeljeni. U svezi sa željenim razvojem kao ciljevi se ističu otvaranje novih radnih mjesta i smanjenje recentne nezaposlenosti, te eventualni relativni porast društvenog bruto proizvoda bez obzira na to koji je gospodarski segment tome pridonio.

Spominju se pri tom i neophodne strukturne promjene, ali se ne definira što se pod njima podrazumijeva, iako zbog izostanka ove globalne definicije izostaju (a) spoznaje o stvarnom i mogućem porijeklu ostvarenog društvenog proizvoda, te (b) spoznaje o mogućem djelovanju na njegov parcijalni i globalni rast. Istovremeno se u praksi razvijenih zemalja porijeklu društvenog proizvoda iz pojedinih gospodarskih segmenata poklanja velika pažnja, ta se struktura inicijalno pomno planira i mjerama se ekonomske politike konzistentno kontrolira i usmjerava.

Pojednostavljenim rječnikom, vodi se računa o tome koliko se društvenog bruto proizvoda unutar nacionalnih okvira ostvaruje u industriji, u poljoprivredi ili u građevinarstvu..... i drugim gospodarskim granama, te se poduzimaju mjere ekonomske politike koje će- u danom odsječku vremena- omogućiti brže povećanje udjela pojedinog gospodarskog segmenta u stvaranju društvenog proizvoda. Preko strukture porijekla društvenog proizvoda na međunarodnom se planu identificira i razina recentne razvijenosti jedne zemlje ili pojedinih njenih regija.

Preko mjera tekuće i razvojne politike na tu se strukturu posredno djeluje izazivajući ubrzavanje ili usporavanje razvoja i efekata kojima se on mjeri. Zajedničko svim razvijenim zemljama pri tom je da se bitnim moderatorom gospodarskog razvoja smatra i graditeljstvo kao gospodarska oblast, jer je s uporištem u istraživanjima dokazano da zbivanja u tom gospodarskom segmentu, s određenim vremenskim pomakom, uvijek ubrzavaju ili usporavaju sveukupni gospodarski razvoj i društveni proizvod kojim se isti mjeri. Naš specifični- recentni i poželjni- odnos prema ovom gospodarskom segmentu općenito i pri upravljanju globalnim nacionalnim i regionalnim razvojem, sadržaj je priloga najavljenog pod nazivom „Graditeljstvo kao moderator nacionalnog i regionalnog razvoja“. Uporište su mu istraživačke spoznaje iz dugoročnog istraživačkog projekta Građevinskog fakulteta Sveučilišta Josipa Jurja Strossmayera u Osijeku- „Dugoročni razvoj hrvatskog građevinarstva“.

1. Introduction

When speaking of civil engineering, it is necessary to primarily define the term, because it has various conceptual, historical, economical and other dimensions.

With that in mind, we can, for starters, point out that this is a human activity as old as society itself, and when talking about engineers who are subjects of this activity, civil engineering represents one of the oldest professions.

Evidence which substantiate this statement is found everywhere, but one of the most conclusive can be found looking at the degrees of education of civil engineers across the world.

The education process for graduate civil engineers in any part of the world, in any given time, is the same as anywhere else, giving the civil engineers an opportunity to successfully get

involved into building process of any kind anywhere in the world. A very small number of professions share this characteristic.

Civil engineering could also be defined and observed by types of objects that are built, their building styles, or some other characteristics.

Within this paper, civil engineering will be regarded as an industry that is a structural element of world, as well as national economic system, which with its natural function complies with a wide range of social and economic, and individual population needs, while using input from other branches of economy and, what is most important for this topic, generates a significant portion of world, and national, gross domestic product.

Civil engineering is therefore a source of larger (or smaller) part of gross domestic product, and planned activities within this industry can, under certain circumstances, affect the gross domestic product by speeding up or slowing down its movement dynamics. This learning is well-known and widely used in mastering economic growth, its programming and dynamics within national economic policies.

This theory also includes known methods and means of dynamizing civil engineering, as well as the framework for inducing or slowing down engineering activities in a certain economic area.

When observing possible effects the management of engineering activities on national basis could have on global economic growth, it is necessary to pay attention to the share civil engineering has in total economic activity, in natural and value terms.

In this region and its specific circumstances, no one thinks of civil engineering in the way mentioned above, and there is no awareness of the effects that managing engineering activities has on the dynamics of the whole economy, and also on the dynamics of generating gross domestic product.

The infrastructure needed to change the approach to this branch of economy exists within the global economic policies – it has been built for years and the saddest part is that it has been financed through national research and development funds. The results were published and elaborated, but the problem is that no one finds it necessary to study them, and they are not used in the process of decision making regarding current and future economic policies.

A long-term research project called “Long-term development of Croatian civil engineering – concept and strategy with projections for the year 2010; Implementation of the strategy, conditions in the region, education modalities” has been actively worked on in these parts since 1981, with numerous papers published within the project. Unfortunately, none of its conclusions were used in macro-management of this branch of economy, even though the most responsible and influential people within the industry have stated that they do not understand even the most basic elements of its structure, territorial arrangement, and other characteristics.

All of the above serves as a motive to remind everyone of the importance of civil engineering as a branch of economy, as well as the possibility of using it as a mean of fulfilling current and developmental goals of national economic policy.

2. The importance of engineering activities – Croatian civil engineering as a branch of economy in the past and today

Specific weight of civil engineering was negligible neither in former Yugoslavia, nor in now independent Republic of Croatia.

Civil engineering has always been a generator of high-value construction projects (the share of construction projects within each unit of realized investments was 0.54), it has always employed a large number of people (around 11% of the total number), engaged an appropriate share of basic national funds at cost (around 4% of the total value of national economy basic funds, and it also generated a large portion of the national gross domestic product (around 7% of Croatia's GDP).

If you add to these facts the contribution of national building materials industry was making to Croatia's gross domestic product (another 2,2%), one finds that the broad form of civil engineering sector, during the transition years when Croatia gained its independence, generated more than 9% of country's GDP.

Croatian civil engineering was generating around 25% of this industry's GDP in former Yugoslavia, and its presence in numerous foreign markets generated a large influx of highly needed foreign currencies.

During that period in Croatia, civil engineering employed around 140 thousand people, with 23.5 thousand more employed in production of building materials.

In the wake of Croatian independence, civil engineering in Croatia (construction and finishing works) consisted of 696 operating units and construction companies, distributed over 10 economic regions (formed via association of municipalities) in Croatia in that period, where the region of Osijek (which is geographically consistent with today's Eastern Croatia macro-region and which consisted of 14 municipalities in that period) was home to 88 companies, which represented 12% out of total number of construction companies.

Construction companies in this region employed around 20.5 thousand people, while the region's building materials industry employed around 10% of people employed in this industry on national level that is around 2400 people. This means that, in the wake of Croatia's independence and during the first years of independence, and before the process of privatization, the industries tied to civil engineering employed around 23 thousand people in this region alone.

Twenty years later, in 2010, in a differently structured Croatia and its economy, the characteristics and significance of civil engineering as a lever of dinamizing economic growth have changed over the course of time.

The contingent of around 700 construction companies which employed around 140 thousand people has been erased from the picture that represents the structure of Croatian civil engineering today.

The reasons for this transformation lie in the transformation of so-called social property into government property, and the transformation of the latter into private property. The

consequences of this transformation are decay and/or structural reorganization of a large number of companies, together with an emergence of new companies, mostly small businesses qualified and equipped to work as a subcontractor on a wide range of construction projects.

These companies in total employ a much smaller number of people than 20 years ago when Croatia gained its independence, even though the number of registered companies is several times larger. The companies are not as equipped as before, and the equipment used is not domestic but imported, and the building materials used in construction projects are also mainly imported, which is a big hit for Croatian industry of building materials, an industry on decline for the past 20 years for various reasons – ownership changes during the process of privatization, elimination from market and market expansions (such as in brick-production, ceramics, cement, industrial construction elements and other).

Together with characteristics mentioned above, this vast number of mostly small businesses does not have significant capital at its disposal, and every larger construction project demands taking out loans (legal and illegal) to finance objects which are in construction, and therefore these subjects in Croatian economy are also responsible for generation of a significant part of national non-solvency.

The effectiveness and efficiency of this randomized concept of national civil engineering is at such a level that, instead of increasing the gross domestic product, it represents a factor of decline of gross domestic product.

Without optimized industrial production based on market principles, and without its optimized share in global economic structure, it is illusive to expect a growth of gross domestic product based exclusively on industries such as commerce, catering and tourism, primarily relying on foreign instead of domestic input.

It is, therefore, primarily a problem of poor alignment of national economic policy, and an inadequate use of instruments used successfully by developed countries, which include civil engineering, demand for which is being systematically induced and dinamized, because the use of those instruments is highly likely to ensure the necessary growth of gross domestic product.

The most responsible subject is the state that is the government which is the creator and the enforcer of national economic policy. It is therefore important that the level of awareness of the governing people is high within the domain of decisions they make and the effects of the measures taken in the field of civil engineering.

The level of awareness among our recent governments, including the current government, is not hard to measure and appraise!

3. Recent characteristics of Croatian civil engineering

A multitude of construction companies and their employees are very unevenly distributed within the Croatian economic environment that today consists of 21 counties (20 + City of Zagreb).

Perennial movement dynamics of these economic subjects and their employees represents a framework for necessary further quality analyses, while the causes for the condition in which

this branch of economy is today should be used to draw lessons for further global planning and management.

This simple image itself provides a clear view of the state Croatian civil engineering is in today that is construction companies that operate within this branch of economy.

Table 1 Overview of main activities of Croatian construction companies⁴⁸ - As of March 31st2010

Main activity	Number of subjects
• Preparatory construction works (demolition of objects and preparatory works on site);	586
• Construction of complete buildings (construction of high-rise and low-rise buildings, building of roof constructions and roofing, construction of roadways, airfields and sports objects, hydro engineering, and other special construction works);	3,378
• Installations works (electric installations, insulation, gas and plumbing, heating and cooling, and other installation works);	306
• Finishing construction works (façade and plaster works, doors and windows, flooring and tiling, wall-painting and glazing, and other finishing works);	180
• Rental of construction machines and equipment with handlers.	1,741
Total	8,336

Table 2 Overview of people employed within the main activities of construction companies - As of March 31st2010

Main activity	Number of employees
• Preparatory construction works (demolition of objects and preparatory works on site);	38815
• Construction of complete buildings (construction of high-rise and low-rise buildings, building of roof constructions and roofing, construction of roadways, airfields and sports objects, hydro engineering, and other special construction works);	29055
• Finishing construction works (façade and plaster works, doors and windows, flooring and tiling, wall-painting and glazing, and other finishing works);	25874
• Rental of construction machines and equipment with handlers.	-
Total	93744

⁴⁸Besides the summary of Croatian civil engineering subjects according to the prevailing activity, information exist on their territorial layout per counties and tendencies almost ten years back, which is also a valuable indicator of development possibilities of each part of Croatia and realization of its Gross Domestic Product..

Table 3 Overview of number of construction companies by county in Croatia⁴⁹ - As of March 31st 2002, 2007 and 2010

Ordinal number	County	2002	2007	2010
1.	Zagreb County	317	537	639
2.	<i>Krapina-Zagorje County</i>	105	182	195
3.	Sisak-Moslavina County	86	126	154
4.	Karlovac County	96	134	142
5.	Varaždin County	130	216	226
6.	Koprivnica-Križevci County	68	114	119
7.	Bjelovar-Bilogora County	78	106	121
8.	Primorje-Gorski Kotar County	418	692	792
9.	Lika-Senj County	40	67	68
10.	Virovitica-Podravina County	48	47	56
11.	Požega-Slavonia County	45	53	50
12.	Brod-Posavina County	126	191	193
13.	Zadar County	122	220	259
14.	Osijek-Baranja County	277	346	343
15.	Šibenik-Knin County	78	98	124
16.	Vukovar-Srijem County	119	162	156
17.	<i>Split-Dalmatia County</i>	585	845	977
18.	Istra County	358	695	768
19.	<i>Dubrovnik-Neretva County</i>	113	191	248
20.	Međimurje County	173	262	290
21.	The City of Zagreb	1371	2122	2416
1-21.	Croatia-total	4753	7406	8336

Source: Republic of Croatia - Central Bureau of Statistics in Zagreb, a special research within the scientific project of continuity since 1981, "Long-term Development of Civil Engineering". It was realized in May 2011.

⁴⁹The project was financed by the Ministry of Science, Education and Sports of the Republic of Croatia, but it stopped it near the end of works, when a synthesis of complex research cognitions and preparations for definite publishing were undergoing. The reason was "failure to comply with the planned cost structure" in scientifically valid planning.

The project leader for years was the Faculty of Civil Engineering of the Josip Juraj Strossmayer University in Osijek, and the initiator and main research expert was prof. emeritus Barbara Medanić, Ph.D.

Overview of people employed in construction companies in Croatia⁵⁰ - Total and by county -
As of March 31st 2002, 2007 and 2010-

Ordinal number	County	2002	2007	2010
1.	Zagreb County	3681	7165	6673
2.	<i>Krapina-Zagorje County</i>	1229	2274	2287
3.	Sisak-Moslavina County	1821	2310	2064
4.	Karlovac County	2652	1922	1942
5.	Varaždin County	2362	4108	4146
6.	Koprivnica-Križevci County	1482	1969	1598
7.	Bjelovar-Bilogora County	1517	1978	1602
8.	Primorje-Gorski Kotar County	4425	7122	6375
9.	Lika-Senj County	506	616	650
10.	Virovitica-Podravina County	604	600	685
11.	Požega-Slavonia County	1138	906	607
12.	Brod-Posavina County	2044	3825	3415
13.	Zadar County	1583	2541	2325
14.	Osijek-Baranja County	5089	6976	6500
15.	Šibenik-Knin County	799	1199	1113
16.	Vukovar-Srijem County	2005	2996	2692
17.	<i>Split-Dalmatia County</i>	6708	9880	10391
18.	Istra County	3435	4899	4902
19.	<i>Dubrovnik-Neretva County</i>	1735	3112	3046
20.	Međimurje County	2710	3829	3390
21.	The City of Zagreb	21961	28324	27341
1-21.	Croatia-total	69482	98551	93744

Source: Republic of Croatia - Central Bureau of Statistics in Zagreb, a special research within the scientific project of continuity since 1981, "Long-term Development of Civil Engineering". It was realized in May 2011.

Today, not many qualitative characteristics of such a vast number of small subjects are known, but they should, in the near future, become a subject to analysis by the appropriate ministries and regional department of Chamber of Commerce, because it is possible that some companies operate as company - employees, company - mechanization, company - modality of financial inflows and outflows of capital and similar, which has become a very popular mean of managing businesses, together with massive evasion of paying social-security contributions, for many boards of directors, who will stop at nothing to compensate and ameliorate the effects of the recent crisis on their businesses, dominated by the principle of

⁵⁰IBID, table 2

“maximum profit at any cost”, instead of “permanent increase of company’s value and stock value of its owners”.

4. Potential developmental effects of civil engineering as a branch of economy

Assuming that we, within our economic structure, own the civil engineering industry, that this industry employs mainly domestic workforce, that mainly domestically produced machines and equipment are used in construction projects, that materials, elements and hardware used in these projects is mainly produced in domestic building materials industry, and assuming that there is a planned structure of demand for domestic civil engineering and that the government has carried out the necessary economic and financial measures needed to induce demand, the effects of the mentioned still require patience.

This is a learning we need to become familiar with!

The effects of inducing demand for civil engineering through construction of new objects, maintenance of existing objects and tearing down of deteriorated objects cannot and will not be immediate and won’t momentarily affect the growth of gross domestic product.

The effects will be seen after a certain period of time, certainly not within the current fiscal year, but they will become clear in the future.

After all, the contraction of investments works in a similar way, gradually slowing down economic activities and the growth of gross domestic product.

Civil engineering, under certain circumstances, affects the growth or decline of gross domestic product.

Given circumstances are closely tied, among other, to optimization of national economic structure.

It is very important to maintain the balance of shares each branch of economy has within the gross domestic product, because not all shares are equally valuable, from the social point of view.

It is absolutely unforgivable to let the economy run itself, and wait for results, and a certain development of gross domestic product must be maintained. However, it is not irrelevant which source feeds the gross domestic product.

Developed countries usually define the economic structure by means of optimal outcome represented by gross domestic product, and by the measures carried out to enforce development of certain economic elements. In these parts, however, the awareness on such economic structures and the importance of their elements is virtually non-present.

Directional economic structure is both useful and necessary for, if nothing else, simulating possible outcomes of most important economic and political decisions, because it is more useful not to allow a possible negative outcome, than to allow it and then carry the burden of the risk and only be able to state that the outcome should have been avoided.

One should also be able to manage the risk of macro-decision making, and one should use the already known and developed wide range of methods and instruments.

One of the more effective instruments for testing major economical-political decisions and their possible outcomes is a sector input-output matrix of Croatian economy – its total, domestic and imported contents.

A long time ago, before its independence, Croatia had developed and used such a matrix! The last matrix was developed in 1988 to check a) the effect of federal measures on Croatia and b) the effect of individual partial measures within the economic policy on each of the relevant parameters (gross domestic product, prices, costs of living, salaries etc.)

Taking into account that during that period information technologies were not as nearly as developed as today, it is extremely difficult to explain a wide disregard for the opportunities available for global decision making and also global and partial economic management.

Namely, the omnipresent method of trial and error is on the most expensive ones, therefore it would be highly feasible to make a sharp turn in macro-planning, using the familiar instruments for simulating outcomes of certain decisions and situations, and minimizing the risk that comes with them.

5. Final messages

Civil engineering is extremely important for global economic growth, but it must primarily be:

- (a) Appropriately dimensioned within the economic structure;
- (b) Encouraged by current and developmental measures of economic policy;
- (c) Exposed to challenges of global investment policy (because of the share construction projects have in current investments) which induce demand for civil engineering;
- (d) Adequately financed;
- (e) Considered a significant source of employment through opening of new workplaces; and
- (f) Appreciated as the most significant consumer of domestic construction materials, and also a consumer of construction machines (excavators, dredgers, transporters, cranes, and other construction machines and equipment).

6. Reference

5.1 Scientific basis for long-term socio-economic development of Croatia – Long-term development of civil engineering and supporting industry in Croatia by the year 2010. Autonomous Scientific Interest Community of Croatia and the Republic Institute for Social Planning – Institute of Civil Engineering; Zagreb; 1990

5.2 Unpublished learnings of long-term research project “Long-term development of civil engineering and supporting industry in Croatia”, 1981-2011, Zagreb Institute of Civil Engineering and Faculty of Civil Engineering in Osijek (the research included systematically researched developmental opportunities, shaped concept and long-term development strategy, making of long-term development projection, suggesting several ways of shaping developmental policy and their implementation in current macro-economic decision making).

5.3 The results of themed research on structure, contents of business and employment, and territorial distribution of Croatian construction companies, done over a course of several years by the Central Bureau of Statistics in Zagreb.