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VABATSOONIDE ROLL JA ARENGUSUUNAD
(VALGA VABATSOONI ÜMBERKUJUNDAMISE NÄITEL)

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Kokkuvõte ja soovitused

Vabatsoonid on loodud ühenduse tolliterritooriumi sellise osana, mis on ülejäänud tolliterritooriumist eraldatud. Vabatsoonis paiknevat kaupa loetakse väljaspool ühenduse tolliterritooriumi olevaks, kui see kaup ei ole lubatud vabasse ringlusse, suunatud mõnele muule tolliprotseduurile ega kasutatud või tarbitud muudel kui tollialaste õigusaktidega ettenähtud tingimustel. Kuna vabatsoonide regulatsioon lähiaastatel muutub, siis toob see kaasa ka Eesti vabatsoonide osalise ümberkujundamise. Käesolevas artiklis on autorid analüüsinud vabatsoonide tegevust puudutavaid regulatsioone ning olulisemaid tegevusnäitajaid. Valga vabatsooni arengut mõjutab ajakohastatud tolliseaduse rakendamine ja kohalik taustsüsteem.

Kokkuvõtlikud soovitused ja teekaart

- Ühenduse tolliseadustikust johtuvalt võivad liikmesriigid osa tolliterritooriumist määratleda vabatsoonina. Uue ajakohastatud tolliseaduse alusel määrab liikmesriik kindlaks iga vabatsooni piirid ning sisse- ja väljapääsud. Ühenduse kaupa võib vabatsooni tuua, seal ladustada, edasi toimetada, kasutada, töödelda ja tarbida. Sellistel juhtudel ei loeta kaupa vabatsooniprotseduurile suunatuks. [Euroopa Parlamendi ja nõukogu määruse (EÜ) nr 450/2008, artikkel: 155–158].
- II kontrollitüüpi vabatsoonide tegevus teatavasti lõpetatakse koos ajakohastatud tolliseaduse jõustumisega, õigupoolest kaob ära vabatsoonide eristamine I ja II kontrollitüübi alusel. Eesti Rahandusministeeriumi hinnangul on uue seadustiku jõustumise realistlik aeg vahemikus 2016.–2017. a.
- Enne uue seadustiku kinnitamist mingeid muudatusi Eestis toimivate vabatsoonidega ei toimu. Vabariigi Valitsuse 03.03.2011. a korraldus nr 96 sätestab, et Valga vabatsoon on loodud kuni Euroopa Parlamendi ja nõukogu määruse (EÜ) nr 450/2008, millega kehtestatakse ühenduse tolliseadustik (ajakohastatud tolliseadustik), kohalduma hakkamise päevani vastavalt artikli 188 lõikele 2.
- Intervjuud Maksu- ja Tolliameti ning Rahandusministeeriumi spetsialistidega andsid arusaama, et Valga II kontrollitüüpi vabatsoonil on võimalik kujuneda vabatsooniks ajakohastatud tolliseaduse mõistes või muutuda tollilaoks. Nn II kontrollitüüpi vabatsoon kujundatakse praeguses mõistes ümber tollilaoks vastavalt ajakohastatud tolliseadusele. Tolliladusid võivad kauba tolliladustamiseks kasutada kõik juriidilised isikud (avalik tolliladu) või tohib kaupa ladustada tollilao pidamise loa omanik (eratolliladu).
- Praeguse Valga vabatsooni kujundamisel tollilaoks kaob ära võimalus edaspidi muutuda uut tüüpi vabatsooniks, kuna tal puudub multimodaalse transpordi, sh merevedude võimalus (merepiiri loetakse ELi välispiiriks).
- Praeguse II kontrollitüüpi vabatsooni kujunemisel ajakohastatud tolliseaduse mõistes vabatsooniks on vajalik koos kohaliku omavalitsusega koostada strateegia ja asuda seda ellu viima. Valga linnavalitsus ja ka maavalitsus peaks panustama strateegia väljatöötamisse ja rakendamisse, vajalik on koospanustamine uute ettevõtete kaasamiseks vabatsooni ja lisandväärtuse andmiseks.

- Vabatsooni staatuse saamine ajakohastatud tolliseaduse alusel on võimalik, kuid eeldab kohaliku omavalitsuse ja ettevõtete panust ning kiiret otsustamist – ümberkujundamiseks on aega tõenäoliselt 3–4 aastat.
- Vabatsooni majandusliku põhjenduse hindamisel vaadatakse eelkõige, kas loodetav majanduslik kasu soovitud tegevusest tuleneb otseselt selle tegevuse läbiviimisest vabatsoonis. Vabatsoone ei käsitleta üldiselt regionaalpoliitiliste instrumentidena. Vabatsooni loomine annab teatud soodustused ettevõtetele piiriüleseks koostööks, kui ettevõtete tegevuses on vajalik tolliprotseduuride edasilükkamine (nt kaubanduspoliitiliste meetmete rakendamise edasilükkamine, ladustada transiidina ühenduseväliseid kaupu, lükata edasi impordimaksude tasumist jm). Valga vabatsooni tugevuseks on juurdepääs logistika- ja transpordisõlmedele, intermodaalse transpordi kättesaadavus ning piirkonna detailplaneering (vt lisa 1).
- Üldjuhul ei pea Maksu- ja Tolliamet vabatsooni taotlust põhjendatuks, kui soovitud tegevust on võimalik teha ka väljaspool vabatsooni või vabaladu ja vabatsoon ei anna kaupadele lisandväärtust.
- Toimunud tegevuste põhjal soovitame asuda teekaardi koostamisele eesmärgiga saavutada õigeaegne üleminek uut tüüpi vabatsoonile.

Summary

The Role and Development Possibilities of Free Zones (on the example of restructuring Valga Free Zone)

Free zones have been created as parts of the Community´s customs region that are separated from the rest of the customs area. The goods placed at free zones are counted as being outside the customs area in case the goods have not been allowed info free circulation, have not been directed to any other customs procedure nor have been used or consumed according to other legislation conditions other than customs law.

As the regulations concerning free zones is subject to change in the upcoming years, it will also result in partly restructuring Estonian free zones. In the following article, the authors analyse the regulations concerning free zones and their most important indicators. The development of Valga Free Zone will be influenced by the implementation of the modernized Customs Code and the regional background.

Deriving from this, the authors have put together the following general suggestions and a road map.

According to the Customs Code of the Community, Member States may designate parts of the customs territory of the Community as free zones.

According to the modernised Customs Code, a Member State shall determine the boarders of each free zone and define its entry and exit points.

Community goods may be entered, stored, moved, used, processed or consumed in a free zone. In such cases the goods shall not be regarded as being under the free-zone procedure.

REGULATION (EC) No 450/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 April 2008 laying down the Community Customs Code (Modernised Customs Code).

Due to the enactment of the modernised Customs Code, the control type II free zones will be closed down, to be more exact, free zones will no longer be differentiated by control types I and II. According to the Ministry of Finance of Estonia, the new customs law is going to enter into force in between 2016–2017.

No changes will occur in the free zones of Estonia until the new Customs Code has been legally confirmed. According to the Order no. 96 by the Government of

the Republic of Estonia from 30.03.2011, the Valga Free Zone will be operated according to the regulations set in article 188 section 2, up until the enactment of the REGULATION (EC) No 450/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, which will lay down the customs legislation for the Community (Modernised Customs Code).

From the interviews conducted with the specialists from the Estonian Tax and Customs Board and the Ministry of Finance of the Republic of Estonia, it can be concluded that the control type II free zone such as Valga Free Zone has a possibility to become either a free zone in terms of the modernized customs code or to become a customs warehouse. The so called control type II free zones are to be reorganized as customs warehouses according to the modernized Customs Code. Customs warehouses can be used for storing goods by all legal persons (public customs warehouse) or by the owner of customs warehouse licence (private customs warehouse).

Reorganizing the current Valga Free Zone as a customs warehouse would cut off the possibility of Valga Free Zone becoming a new type of free zone in the future, as it lacks the possibility of multi modal transport, including maritime freight possibility (sea border is seen as an external border of the EU).

Restructuring Valga Free Zone from control type II free zone into a free zone in terms of the modernised Customs Code would require developing and implementing a strategy together with local government. Valga Town Council and Valga County Government should put effort into developing and implementing the strategy, the necessary steps are joint efforts for including new enterprises in the free zone and creating additional value to the free zone.

It is possible for Valga Free Zone to achieve the status of a free zone in terms of the modernised Customs Code, but it presumes the input from local government and enterprises and also quick decision-making: the time for restructuring is probably 3–4 years.

When assessing the economic indicators, what is most closely looked at is whether the presumed economic profit would directly result from the activities conducted in the free zone. Free zones are generally not seen as instruments of regional policy. Creating a free zone would give certain benefits for the cross-border cooperation of enterprises in case in their activities it´s necessary to put forward customs procedures (e.g. putting forward the implementation of trade-political measures, store goods from outside the Community as transit, put forward paying import taxes etc). The strengths of Valga Free Zone are the following: access to logistics and transport nodes, the availability of inter modal transport and the region´s detailed plan.

In general, The Tax and Customs board does not see the free zone application as reasoned in case the activities listed can be carried out outside the free zone area as well, or in case the free warehouse or the free zone would not give additional value to the goods.

Based on the completed actions, the authors of the report advise the planners to start with composing a road map with a goal to achieve an in-time reorganization of Valga Free Zone into the new type of free zone.

EESTI TÖÖTURG „EUROOPA STRATEEGIA 2020" TAUSTAL. BEVERIDGE'I KÕVERAD

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Kokkuvõte

Tööturu analüüsil peab arvestama majanduse tsüklilist iseloomu ja arengus ka intensiivse majanduse osatähtsust. Majanduskriisi ajal halvenesid peaaegu kõik majandusnäitajad enamikus riikides, sh ka Eestis. 2010. aasta esimese poole jooksul oli toimunud oluline edasiminek ELis tervikuna, kuid tööhõive jäi veel alla parematele aegadele. Tuleb arvestada, et Eesti ei saa tänapäeva üha enam globaliseeruvas maailmas üksi toime tulla, vaid sõltub teistest, eelkõige ELi riikides toimuvast. See kehtib ka tööturu kohta.

Tihti ei piisa tööturu analüüsiks aastatepikkusest perioodist, eriti kriisiaegadel, vaid on vaja vaadelda lühemaid perioode – kvartalite või võimaluse korral isegi kuude lõikes.

„Euroopa 2020. aasta strateegia" järgi on üheks tähtsaks eesmärgiks tööpuuduse kiire vähendamine ning tõhusate tööturureformide elluviimine, et aidata luua rohkem ja paremaid töökohti. Vaja oleks suurendada teatavate rühmade osalemise määra tööturul ja parandada selle toimimist. Majanduskriis suurendas tööpuudust märkimisväärselt ja samas ähvardavad demograafilised muudatused olemasoleva tööjõu hulka veelgi vähendada. Enamikul ELi liikmesriikidest, sh Eestil, tuleb võtta tarvitusele olulisi abinõusid, et tõsta jätkusuutliku arengu tagamiseks hõivatuse määr 75%ni, selleks ei piisa ainult töötuse vähenemisest. Vähene osalemine tööturul on Euroopa peamine pikaajaline struktuurinõrkus. Enne kriisi oli tööhõive määr Euroopas USA ja Jaapani omast mitu protsendipunkti madalam. Reservideks oleksid vabade kohtade arvu viimine miinimumini, osalise tööajaga töötajate efektiivsem rakendamine; noorte ja vanemaealiste ning madala kvalifikatsiooniga töötajate hõive suurendamine; samuti tööjõu voolavuse vähendamine.

Tööturu analüüsis peaks vaatlema kõiki komponente vastastikuses sõltuvuses. Ühe või kahe teguri käsitlemine ei võimalda välja töötada kõige efektiivsemaid abinõusid. Lihtsamas analüüsis vaadeldakse ainult olulisemaid tegureid. Seda näitab Euroopa praktika, kus reeglina paraneb olukord tööturul vaatamata majanduskasvule siiski aeglaselt ja tarvitusele võetud abinõud on reeglina väheefektiivsed. Seoses tööjõu vaba liikumisega ELis peaks analüüs tuginema eelkõige hõivatuse, mitte aga töötuse muutustele. Tööjõu liikumise põhjuste uurimisel ELis tuleb arvestada, et palkade suur erinevus vanades ja uutes liikmesriikides avaldab sellele otsest mõju ning suurendab tööjõu mobiilsust. Töötuse analüüsil peab samuti arvestama, et selle andmed ei ole täiesti õiged, sest eriti Ida-Euroopa maades, sh ka Eestis registreerivad inimesed end küll töötuna, kuid samas töötavad (kas või osaliselt) välismaal, näiteks Soomes või mitteametlikult kodumaal.

Artiklis nimetatud Nobeli 2010. aasta majanduse mälestusauhinna laureaadid on samuti märkinud vana tõde, et nende suhtes, kes ei taha pakutud tööd vastu võtta, on vaja rakendada mingisugust sundi. Selleks ei ole vaja analüüsida kauge Ameerika olukorda, vaid piisab meil Eestis valitsevale olukorrale põhjalikuma hinnangu andmisest. Nii ei paranda formaalne ümberõpe olukorda. Osa töötuist on aga sellised, keda tööandjate arvates ei tohiks üldse töö juurde lastagi, sest nende otsene ja kaudne kahju nii ettevõttele kui kaudselt ka ühiskonnale ületab oluliselt töötu hüvitise. Kui Eesti puhul võtame töötute hulgast maha need, kes töötavad mitteametlikult, ei maksa riigile makse ega soovigi töötada, on tegelik

töötus oluliselt väiksem. Samas jääb paratamatult siirdetööpuudus ja sellest mõnevõrra kõrgem töötuse määr, mis on isegi kasulik, sest see aitab tagada töö ning teeninduste vajaliku kvaliteedi ja annab tööandajale parema võimaluse nõuda töödistsipliinist kinnipidamist. Positiivselt mõjus tööturu olukorrale ka Eesti uus tööseadus, mis lihtsustas töötajate koondamist ja vallandamist. Primitiivne kõigi töötajate võrdsustamine ja soov näha kõigis ideaalseid töötajaid ainult halvendab tööturu kvaliteeti. Inimeste võimed ja motivatsioon tööd teha on siiski väga erinevad, seega on vastuolud ning konkurents ka tööturul arengu aluseks. Selle eitamine tähendaks majanduses seisakut.

Pärast majanduskriisi kasvab SKP jällegi, kuid tööpuudus kahaneb aeglaselt. Miks? Kriisist väljumiseks püüavad ettevõtjad viia tööjõukulud miinimumini. Püütakse vabaneda eelkõige ebakvaliteetsetest, liigsetest ja ka konfliktsetest töötajatest. Samaaegselt on kerkinud uus probleem – ei jätku kvalifitseeritud tööjõudu. See ei ole ainult Eestis nii.

Majandus ei arene pärast kriisi enam ekstensiivset, vaid peamiselt intensiivset teed mööda. See tähendab, et tootmise laiendamine toimub peamiselt efektiivsemate masinate ja seadmete kasutuselevõtmise ning töö parema organiseerimise abil. See vähendab madala kvalifikatsiooniga tööliste hulka ja suurendab nõudlust kõrge kvalifikatsiooniga töötajate järele. See ei puuduta mitte ainult töölisi, vaid ka kõrgharidusega inimesi – insenere, ökonomiste ja teisi spetsialiste. Siit tuleneb ka kõrghariduse kvaliteedi probleem. Märgatavalt on kasvanud nõudlus teabekapitali (inimvara) järele, mis on infoühiskonna suurim väärtus.

Saab väita, et klassikaline Beveridge'i kõver sobib lihtsustatud järelduste tegemiseks, kuid reaalse majanduse jaoks sobivad reeglina siin esitatud täiendatud Beveridge'i kõverad tunduvalt paremini. Üldistatult on see kõver teatud täpsusega ühesugune kõikidele riikidele, kuid samas siiski erinev, mis iseloomustab iga riigi majanduse ja tööturu arengu eripärasid. Töötuse kasvades tekib aga olukord, kus hakkab suurenema ka vakants, mis on riigiti erinev, eriti Saksamaa puhul. Süvaanalüüsi jaoks on vaja uurida, miks artiklis näidatud kõvera parempoolses osas vabade kohtade arv suure tööpuuduse tingimustes kerkib? Mida annab siin teha, arvestades probleemiga, et tööhõivet on vaja tulevikus tõsta nii meil ELis kui ka teistes arenenud tööstusriikides? Üheks lahenduseks oleks informeerituse parandamine kõigil tasanditel. Vaja oleks jätkata tööjõu kvalifikatsiooni tõstmist, ümberõpet, palgad tuleks viia vastavusse tööviljakusega, parandada töötingimusi, motivatsiooni jmt, kuid samuti suurendada teatud määral survet neile, kes ei osale subjektiivsetel põhjustel tööhõives. Oluline on ka nii töötajate kui ka tööandjate senisest kõrgem eetiline tase. Kokkuvõttes aitaks see tõsta tööhõivet sellisele tasemele, et ei oleks vaja tuua võõrtöötajaid väljastpoolt ELi.

Arengumaades, nagu Hiina, India jm, on teised probleemid. Kõigile siit esilekerkivatele küsimustele ammendava vastuse andmine, aga ka tööturu komplektne analüüs, on väga mahukas ega mahu ühe artikli raamidesse. Kuna tööturu komponente on palju ja nende kõigi süvaanalüüs mahukas, on artiklis paratamatult käsitletud lühidalt ainult osasid.

Teadusliku uudsusena on üldistatult esitatud Eesti kui ELi „tiigerriigi" tööturu arengu ja selle seoste põhjalikum analüüs, matemaatilised mudelid ning teoreetilise uudsusena täiendatud Beveridge'i kõver, mis aitab täpsemalt selgitada kõrge töötuse määra juures vabade töökohtade dünaamikat ning selle alusel välja töötada vastavaid abinõusid. Täiendatud Beveridge'i kõver on uudne mitte ainult Eesti, vaid kogu Euroopa tööturu analüüsi jaoks. Üldistusteks

maailma jaoks oleks täiendavalt vaja analüüsida neid seoseid USA, Jaapani ja teiste arenenud majandusega riikide kohta.

Summary

The labour market of Estonia and „Europe 2020 strategy". Beveridge curve

One of the priorities of „Europe 2020 strategy" is the EU economy with a high employment rate for the next decade. Therefore, the purpose of the current article is to analyse the labour market in Estonia general, its unemployment rate and vacancies, the problems within the labour market, and compare this data with Estonian key partner countries in the EU.

The problem with the cyclical nature of economy is the large number of vacancies even in the situation of unemployment. This article presents a novel approach to the analysis of the relation of vacancies and unemployment (improved Beveridge curve), their mathematical models and suggestions for improving the situation in the labour market.

When analysing the labour market, the cyclical nature of the economy, as well as the intensive periods of economic growth have to be taken into account. During the economic crisis, almost all economic indicators fell in most countries, including Estonia. In the first half of 2010, there had been a considerable progress in the EU, but unemployment rates were still lower than during better times.

We have to acknowledge that Estonia cannot succeed alone in the globalizing world, but depend on what is happening in other countries, especially in those of the EU. All this applies to the labour market as well. Especially during crisis periods, it is beneficial to analyse the labour market by shorter periods than a year – by quarters or even months.

According to „Europe 2020 Strategy", one of the most important goals is achieving the rapid fall of unemployment and the implementation of efficient labour market reforms, in order to help create more and better jobs. It would be necessary to increase the participation rate of some groups in the labour market, and improve the efficiency of the labour market. Due to the economic crisis, unemployment increased significantly, and the demographic changes ahead threaten to decrease the amount of labour force even more. For sustainable development, achieving lower unemployment rates will not be enough; most member countries of the EU, including Estonia, have to take up measures to increase employment rate up to 75%. The low participation rate in the labour market is one of the long-term structural weaknesses of Europe. Before the economic crisis, the employment rate in Europe was many percentage points lower than in Japan or in the USA. What would help to solve these problems are minimizing the number of vacancies, more efficient use of part-time employees, increasing the employment rate of younger and older people and those of low qualifications; decreasing job changes in the labour market.

In the labour market analysis, all its components should be looked at according to their relations to each other. In a simpler analysis, only the most important factors will be concentrated on. However, analysing one or two factors does not allow developing the most efficient means to improve the situation in the labour market. This is also shown by the European practice where despite economic growth, the situation of the labour market is improving slowly, and the implemented means are less effective than expected. Due to the free movement of people in the EU, the analysis of labour markets should focus on the changes in employment rates, not unemployment rates. When analysing the reasons of employees´ mobility, the fact that wages differ in the old and new member

states should also be taken into account. This has a direct effect on the mobility of employees. When analysing unemployment, one also has to consider that the data may not reflect the actual reality, as in the Eastern European countries, including Estonia, people may be register as unemployed, but may actually be working (part-time) abroad, for example in Finland, or they may be working without a contract in their home country.

The winners of the 2010 Nobel Memorial Prize on Economics cited in this article have also noticed that for those who do not wish to take the job they are offered, some kind of measures should be implemented. For doing that, we do not need to analyse the situation in the USA, it is enough if we assess the situation in Estonia more thoroughly. A formal retraining (of the unemployed) does not fix the situation. According to employers, a number of unemployed people should not be hired at all, as the damage they cause directly or indirectly to the employer and to the society at large considerably exceeds the costs on unemployment benefits. As for Estonia, when we do not count among the unemployed the people working unofficially, the ones who do not pay taxes to the country and the ones who have no desire to work at all, the actual unemployment rate is much lower. At the same time, the transfer unemployment connected to mobility is still inexorably there, along with the higher than normal unemployment rate, which may even be beneficial, because it helps to guarantee the necessary quality of the work and services and gives the employer a better chance to require the fulfilment of the working discipline. The new Labour Act of Estonia, which simplified the firing and lay-off procedure of the employees, has also had a positive effect on the labour market. The primitive equalizing of all employees and the wish to see an ideal employee in everyone lowers the quality of the labour market. The abilities and motivation of people vary greatly; therefore contradictions and competition are the basis for development of the labour market. Denying this would lead to economic stagnation.

After the economic crisis, the GDP of Estonia started growing again, but the fall of unemployment rate has been very slow. What are the reasons for this? In order to come out of crisis, enterprises try to minimize labour costs. First, the companies try to get rid of workers who are unqualified, not needed or have conflict personalities. At the same time, we are facing a new problem: there are not enough qualified employees to be found. Estonia is not the only one facing this problem.

After the crisis, economy does not develop extensively any more, instead, it develops along an intensive path. This means that manufacturing will grow mainly due to the use of more efficient machines and devices and more efficient organization of the work process. This lessens the amount of low qualified workers and raises the demand for employees with high qualifications.

This does not only concern the unskilled workers, but also those having higher education – engineers, economists and other specialists. Hence we face also the problem of the quality of higher education. The demand for knowledge capital (human resource) has grown noticeably – this is the greatest value in the information society.

It may be claimed that the classic Beveridge curve suits well for making less complicated conclusions, but for analysing real economic situations, the improved Beveridge curve is much more suitable. In general, the improved curve shows quite similar results in all the countries with certain accuracy, at the same time, it also enables to bring out differences describing the peculiarities of every country and its labour market. When unemployment rises, however, we face a situation when vacancies also start growing. These relations vary from country to

country, and they are considerably different in Germany than in other EU countries. For conducting a more thorough analysis, it must be found out why does the number of vacancies in the right side of the curve grow in the situation of high unemployment? What can be done here, considering that the employment rates have to start growing in Europe and other developed countries? One of the solutions would be improving communication in all levels. It is necessary to continue improving the quality of employees, continue with in-service trainings, the wages should be in correlation with labour productivity; working conditions, motivation etc. should be improved, and those not being involved in the labour market should be pressurised to work. Another important factor is to cultivate high ethical norms among employees and employers. All these measures would help to raise employment rate to such a level that there is no need to import immigrant workers from outside the EU.

As a new contribution to research, the current article presents a (thorough) analysis of the Estonian labour market (Estonia being one of the tiger countries of the EU). As a new contribution to theory, the authors of the article have developed the improved Beveridge curve, which helps to explain the dynamics of vacancies in the situation of high unemployment rates, and based on this; develop measures for finding solutions to these problems.

The improved Beveridge curve is novel not only for Estonia, but for the analysis of the EU labour market as a whole. For global analysis, a more detailed research on the economies of the USA, Japan and other developed countries must be conducted.

ETTEVÕTLUS, TÖÖVILJAKUS JA PALGAD

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Kokkuvõte

Majanduskriisi ajal halvenesid peaaegu kõik majandusnäitajad. 2010. aasta esimese poole jooksul on toimunud Eestis oluline edasiminek, kuid see jääb meie parematele aegadele veel alla. Kasv on jätkunud ka 2011. aastal. Kuid ainult bruto- ja netopalkade võrdlusest on vähe, süvaanalüüsi jaoks tuleks vaadelda hinnataset, sotsiaalkulutusi, perekonna eelarve jagunemist ja teisi sotsiaalnäitajaid. Teatavasti on Euroopa kõrgeimad hinnad Šveitsis ja Norras ning ELi riikidest Taanis. Osa suhteliselt kõrgeid Eesti kaupade ja teenuste hindu on küll Saksamaa tasemel, kuid tervikuna on need siiski madalamad kui rikastes Lääne-Euroopa maades.

Avaliku ja erasektori palgataseme võrdluses tuleb kindlasti arvestada asjaolu, et avalikus sektoris on kõrgharidusega töötajate osakaal tunduvalt suurem kui erasektoris. Seetõttu ei ole mingit mõtet võrrelda näiteks haridusvaldkonna kui avaliku sektori ja teeninduse kui erasektori palgataset, sest töötajate kvalifikatsioon on liiga erinev. Kuid suurt palgaerinevust kõrg- ja alghariduse töötajate palgatasemes kahjuks ei ole.

Rootsi tööviljakus kuus oli 2008. aastal 1,75 ja Soomel 1,72 korda kõrgem ning ühe töötunni tööviljakus vastavalt 2,15 ja 2,02 korda kõrgem kui Eestil.

2010. aastal (Rev. 2) olid Rootsi tööjõukulud kuus 5085, Soomel 4040 ja Eestil 1098 eurot. Seega Eestis olid tööjõukulud 2010. aastal 4,63 ja 3,68 korda väiksemad kui Rootsis ja Soomes.

2010. aastal oli Rootsi brutoaastapalk 37 592 ja Eestil 9490 eurot. Suhe: 3,96.

2011. aastal oli netoaastapalk Rootsis 27 320, Soomes 25 385 ja Eestis 6663 eurot. Suhe vastavalt 4,10 ja 3,81. Võrreldes palkade erinevusi on see suhe normaalne, sest tööjõukuludest moodustavad peamise osa palgad, Eestil 73,38% (2010). Kuid võrreldes palkasid tööviljakusega on see suhe ebanormaalne.

Tööviljakuse järgi peaks Eesti netoaastapalk olema 15 611 või 14 759 eurot ehk 2,3 või 2,2 korda kõrgem kui käesoleval ajal. See oleks ligi pool Riigikogu liikme palgast. Võrdleme netopalkasid sellepärast, et Rootsi ja Soome maksupoliitika erineb Eesti omast.

Eesti tööviljakus on 65%, kuid palgad kolmandik ELi ja neljandik Põhjamaade keskmisest. Järelikult sellise meie keskmise tööviljakuse taseme juures on reeglina siiski võimalik palkasid tõsta eelkõige omanike kasumi arvelt. See vähendaks ka kvalifitseeritud tööjõu väljavoolu. Nende Eestis hoidmine on kaugemas perspektiivis kasulik ka tööandjatele. Palkade mõistlik tõstmine oleks firmadele kasulik investeering tulevikku, kasumi suurenemise kindlustab aga kvalifitseeritud tööjõu säilitamine, uute töötajate liigsete väljaõppekulude kokkuhoid või vähendamine jmt. Kuid ärgem unustagem ka majandusteooria põhitõde: äriettevõtte peaeesmärk on omanikele kasumi teenimine. Siit tekkib huvide konflikt. Sellest tulenevalt võib vaadelda erinevaid ettevõtteid selle pilgu läbi, kas nende tegevus on suunatud ainult tänasesse või hoopiski homsesse päeva.

Summary

Entrepreneurship, productivity and salaries

"Strategy of Europe for 2020" of the European Union is an action plan, designed to help brace the EU economy for the next decade. One priority conspicuously featuring in it, is the labour market.

Hence the objective of this article is to analyse the labour market of new member states of the EU coming from East-Europe, with emphasis made on Estonia, more specifically the productivity and salaries, problems associated with labour market, and to compare it with the EU levels. Authors used technique and definitions of labour market survey specified in ILO and Eurotat.
The success achieved within the framework of those priorities will be measured on EU level by reference to five major goals, which the member states must observe, when setting down their proper objectives. To attain those targets, the European action plan 2020 was created, incorporating several magnum projects. With the magnum project „Action plan for creating new skills and jobs" the foundation will be laid to modernize the labour market, in order to enhance the level of employment and secure sustainability of European society models, after the baby boom generation leaves on superannuation pension. One important goal is implementation of effective labour market reforms, in order to help create more and better jobs, which should help elevate the rate of involvement of certain groups in labour market and improve its workability.
Increments of economy in Estonia, Latvia and Lithuania, as well as other new EU member-states, which occurred before the advent of the economic crisis used to be the highest in the EU. Thence the title Baltic tigers assigned to them. Crisis however landed those countries in the abyss – their drop of GDP was one of the largest. After the crisis the increments of Estonian economy have again reached one of the highest standards in EU. Budget of the state of Estonia is, too one of the best and the foreign debt one of the lowest, however by unemployment rate this country is among the rearmost ones. In-depth analysis of such a situation enables making generalisations, after the example of development of the economy in Estonia, a midget country.
After the economic crisis the GDP usually goes on an upward incline, while the unemployment is hard to curb. Why? To surmount the crisis, companies try to reduce the labour costs to a minimum. They endeavour to get rid of poor quality, redundant and also conflict-prone workers, in the first place. Concurrently a new problem rises – qualified labour is scarce. This problem does not only pester Estonia, it is endemic. One of the root causes are locally prevalent low salaries as compared to the remunerations paid in West-European countries.
After the crisis the economy does not develop along the extensive track, but mainly by the intensive ways, i.e. on account of growth in productivity. Expanding of the production occurs mainly with the help of adopting more efficient machines and equipment and better work organisation, reducing the number of low-qualification workers and increasing the demand for high-qualification ones. Besides workers, that also affects the people with higher education and other specialists. Decline in engagement in work, and unemployment have become a topical issue of the post-economic-crisis period. Regardless of the relatively large unemployment an opposite situation has obtained in the labour market – in many branches of economy, the qualified labour is scarce. Due to free movement of labour in the EU countries a situation has obtained in the East-European member states, incl. also in Estonia: younger and experienced workers leave the country to work abroad, where salaries are higher. It is a foregone conclusion.
By reference to the above, the goal of this article is to analyse the major components affecting the labour market, the productivity and salaries and their relation in East-Europe, in the first place in Estonia. It is usually alleged that salaries cannot be increased due to low productivity. Since Estonian productivity in ratios is over twice higher than the salaries, the question "Why?" suggests

itself. While the emphasis will be on Estonia, for theoretical generalisations the EU as an entirety has been partially involved in this article.
The analysis bases mainly on the positions of „Strategy of Europe for 2020" concerning labour market and also the positions of other authors having tackled that issue. What are the opportunities to increase the labour market's efficiency and salaries?
Estonian labour expense is from 3 - 4 times lower than in the European countries of larger labour expense and 1.6 times lower than in Slovenia. Whereas Estonia's expenses are 4 times larger than in Bulgaria, but by half larger than in Romania etc. Out of post-socialist EU member states Estonia's expenses are still among the highest, this country ranking the third.
While in 1997 the EU's average labour expense was 7.3 times larger than in Estonia, in 2010 that ratio was only 3 times larger. In absolute figures EU's expenses grew in the same period by 965 EUR and in Estonia by 789 EUR. Hence Estonia's discrepancy from the EU average has conspicuously shrunk.
In Estonia, in 1997 labour expense for one hour was 2.13 EUR, in 2008 already 7.51 EUR. In 1997, Estonia's one month's labour expense was 320 EUR and in 2008 – 1132.3 EUR. The growth was over 3.5 times. In 2007, the highest one month's labour expenses were in: Luxembourg = 4801; Denmark = 4658.8; United Kingdom = 4297.6; Belgium = 4171.1 EUR. The lowest were in Bulgaria 280.2 and Romania 526.9 EUR.
In 2010 Q4 labour expense had increased in ratios in almost all of them, on average over 5%, except for Estonia, Latvia and Lithuania, whose expenses kept under the average level of 2008.
Bulgaria's increment was the largest (+26.7%), showing that discrepancy with the others was decreasing.
To hark back, prior to economic crisis the economic growth in the Baltic states was the highest in the EU. The present decrease of labour expense as against 2008 is tantamount (equivalent in significance) to deflation of the pre-crisis economy.
Labour expenses per hour stand widely apart in Europe, up to 18.5 times. They are the highest, in excess of 30 euro, in Switzerland (35.05), Denmark (34.74), Belgium (33.66), Luxembourg (33.63), Sweden (33.3) and France (31.97). They are also soaring in Finland (29.38). The countries of the cheapest labour among the EU member states are Romania (3.41) and Bulgaria (1.89). Estonia's labour expense (7.51) is as yet three times lower than average for EU-27 and it is lower still in only six EU states. Hence Estonia remains the country of cheap labour.
Share of Estonia's gross salaries in total labour expense in the years of 1997 – 2008 was stable in the interval 72.78 – 73.85%, in Latvia 78.9% and Lithuania 71.5%, whereas in 2007 it was the largest in Malta (92.86%) and the lowest in Sweden (66.18%).
In EU 27 tax burden out of labour expense in the years of 1996 – 2008 was rather stable, keeping in the interval 4.1 – 38.5%, whereas in euro zone countries the average in 2008 was 42.8%. In that year the lower tax burden in labour expense was in Cyprus (11.9%), Malta (17.9%), Luxembourg (28.5%) and the United Kingdom (19.7%) and larger in Belgium (49.8%), Hungary (46.7%), Germany (46.6%) and France (45.4%). Contrastively, USA's expenses constituted 26.6%, Japan's 2002=23.2% and Norway 34.1%. Estonian tax burden out of labour expense decreased from 2003 (40.7%), in 2008 dropping to 38.2%.
Gross per year salaries' discrepancy is overwhelmingly large: in Denmark (53165) and Bulgaria (2626) it is 20.2 times. The non-EU affiliated Norway's

(47221.4) and Switzerland's (47095.9) salaries are among the highest in Europe. Considerable is discrepancy also between the EU-15 countries: in Denmark (53165) and Portugal (15345.2) the discrepancy is 3.5 times. Among new accessions to the EU, in the post-socialist countries Hungary (8952) and Bulgaria (2626) the discrepancy is 3.4 times, whereas the candidate state Croatia's (9634.4) average salary is larger than salaries in new accessions to the EU, i.e. the post-socialist countries. In new member states, which are veteran market economies, Cyprus (21310) and Malta (15679) they are significantly larger than salaries in post-socialist and even latest EU-15 countries.
Discrepancies in minimum salaries still are overwhelmingly large. Hence in Bulgaria it was 13.7 times lesser than in Luxembourg, 4.9 times lesser than in better economy post-socialist Slovenia and 2.3 times lesser than in Estonia. Whereas in Estonia the minimum salary is 6.05 times lesser than in Luxembourg and 2.15 times lesser than in Slovenia.
Share of minimum salary in average monthly salary is a major economic policy problem, depending on political decisions and country's economy level. It constitutes nearly a half in Greece (49.5%), Malta (49.3%), Belgium (47.3%), Luxembourg (47.2%) and France (46.5%). It is of lesser proportion, besides Estonia (2008=34.1%) also in Czech Republic (35.0%), Slovakia (34.8%) and Romania (30.5%).
Of lower productivity are post-socialist countries, however somewhat higher is the level of Malta and Cyprus. Of somewhat higher productivity than Estonia is the EU-15 state Portugal. Of still higher productivity are EU post-socialist states Slovenia, Slovakia, Hungary and Czech Republic.
Of EU candidate states, Croatia excels Estonia and Turkey maintains the same level.
In Estonia the yield per worker i.e. productivity grew in the period under scrutiny 1.5 times, however it got suspended during the economic crisis.
Contrastively, in 2008 in Latvia the yield per one worker was 51%, in Lithuania 61% and in Estonia 64%, as the EU-27 average. The highest among EU member states it was in Luxembourg (161), Ireland (134), Belgium (125) and France (121) and the lowest in Bulgaria (36%) and Romania (48). In Norway (157) and USA (145) the productivity was 1.5 times higher than the EU average.
Largest gross salary was evidenced in June 2008 – 905 euro and the least in August 2009 – 720 euro. 2010 still witnessed continual incremental growth, however two years earlier it was still higher. June 2008 witnessed the record 904.99 average gross monthly salary, December 2010 evidenced 848.55 euro i.e. less by 56.44 euro.
In 2010 IV quarter the share of net monthly salary constituted 80% of gross monthly salary, being among the highest in the EU member states.
Quite naturally, in the pre-crisis year the salary and consequently labour expense were larger than in 2009. As from the second quarter 2010 the level of the previous year was superseded, however there was a shortfall, as compared to the pre-crisis time.
As per areas of activities the IV quarter of 2010 continually displayed the largest gross monthly salary in finance and insurance business (1337.73) and in information and communication (1305.33). Salaries in manufacturing industry (777.10); trade (740.74) and building (853.35) were much lower. The lesser area however was „other servicing business " – 502.41 euro.
Average gross monthly salary in 2010, IV quarter was the largest in Tallinn 920.46 and Tartu 811.93 and lower in Valga 610.48 euro.

Theoretical bases lay, as a rule on relevant positions of renown economists published in academic issues and concerning mainly East-Europe, analyses and reference data of international organisations (ILO, IMF, OECD, Eurostat etc.) and also on positions of present authors released in their earlier publications.
To sum up, during the economic crisis all Estonian economic indicators worsened. 2010 witnessed a major advance, however that falls short of the best times in this country.
Estonian productivity is 64%, but salaries are below 30% EU average. Consequently at such level of average productivity it is, as a general rule possible to raise salaries.
Productivity in ratios of other post-socialist countries, new EU states is also substantially higher than salaries.
Significant discrepancy of productivity and salaries causes movement of labour of East-European states to the states of higher salaries. Whereas it must be taken into account that East-European countries produce, as a general rule goods of lower value than in Western Europe.
Nevertheless the labour market will put in place, in due course of time the correct relation of productivity and salaries, but by that time new EU member states will have lost part of their precious labour.

PROFIILPLEKKID E PAIGUTISTEST JÄRELKRIITILISES STAADIUMIS

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Probleemi püsitus

Katusekatteks kasutatakse tänapäeval pea eranditult terasplekist valtsitud paneele. Profiilpleki kandevõimet arvutatakse tavaliselt tala skeemi järgi ühtlaselt jaotatud koormusega. Kasutusel võivad olla nii ühe-, kahe- kui ka rohkemasildelised arvutusskeemid. Madalate kandjate puhul on enamikul juhtudel määravaks kasutuspiirseisund, kus limiteeritakse suhtelist paigutist $\delta = \Delta/L$ küllaltki liberaalselt, kus olenevalt plaadi kasutustingimustest peab paigutis Δ jääma väiksemaks kui sajandik või kahesajandik sildest L, erandjuhtudel ka kolmesajandik. Nagu üldiselt teada, on selliste madalate talakandjate puhul kandepiirseisund kuhjaga täidetud. Seega tingimuseks jääb:
$\delta = \Delta/L = 1/100\cdots1/200\cdots(1/300)$.
Vastavalt väljakujunenud tavale arvutatakse põikkoormusega koormatud profiilplekist plaadi paigutisi tavaliste ehitusmehaanika võtetega, kuid paindejäikuseks on EIef ehk efektiivne paindejäikus. See tähendab, et paigutise arvutamisel eeldatakse, et profiilpleki surutud vöö on välja mõlkunud ja surutud plaadi osa ei tööta täie ristlõikega.
Klassikalises ehitusmehaanikas on koormuse ja paigutise vahel lineaarne seos: paigutis on võrdeline koormusega. Nii on ka talaplaadina töötaval profiilplekil. Kui on aga tegemist stabiilsuskao ülesannetega, siis asi enam nii ei ole.
Varrastes ja varrassüsteemides esinev stabiilsuskadu on nähtus, kus kriitilise koormuse saabudes võib esineda hetkeline väga suur paigutise juurdekasv, mis reeglina viib arvutusskeemi muutuseni ja enamasti ka kandevõime kaoni.
Plaatide ja koorikute koormamisel üle kriitilise koormuse esineb tavaliselt vaid plaadi või kooriku pinna mõlkumine, mis reeglina ei vii konstruktsiooni purunemiseni ja kandevõime kaoni, vaid kutsub konstruktsioonis esile paigutiste mittelineaarse suurenemise. Tüüpiline näide sellisest mittelineaarsest paigutise suurenemisest esineb profiilplekkide koormamisel põikkoormusega.

Summary

Corrugated panels' displacement in post-critical state

Nowadays, the majority of all buildings are sheathed with corrugated steel panels. As corrugated steel sheets are relatively shallow beam panels affected by bending, the serviceability limit state becomes significant in determining the bearing capacity. According to the valid regulations, the basis for calculating the panels' displacement is effective flexural rigidity, which means that an outwardly dished belted plate is used as the cross section's moment of inertia.
In the present research it is shown that the displacement found on the basis of this calculation is greater in case of boundary deflection than it was as the result of our experiment. In the current research, a logarithm, which enables to find the actual displacement in the circumstances where part of the panel's upper belt has lost stability, is found.

TARD - JA SETTEKIVIMITEST EHITATUD TEEKATENDI KILLUSTIKALUSE VÕRDLUSKATSE

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Kokkuvõte

Artiklis käsitletud temaatika on suunatud suure liiklusintensiivsusega teedele ning esitatud tulemid kehtivad vaid tugevast lubjakivikillustikust (LA25) ehitatud aluse puhul.

Peamised muutused koormamisest toimusid liivaluses ja asfaltbetoonis, kusjuures tard- ja lubjakivikonstruktsioonid töötasid laias laastus identselt. Lubjakivikillustik purunes tihendamise ja katse käigus mõningal määral ning see võis mõjutada kogu konstruktsiooni elastsusmooduli vähenemise (väide vajab lisauuringuid, kuna võrdlusmaterjali ega võimalikku hajuvust kõrvaldavaid katseid pole). Katsetus sooritati kuivas olekus, st ei kaasatud vee, sulamis-külmumistsüklite ega kloriidide mõjutegureid.

Teada on, et lubjakivi laguneb kloriidide olemasolul, mida tuleb teede projekteerimisel, ehitamisel ja hooldamisel kindlasti arvestada. Näiteks tuleks nendel teedel, millel tehakse talvist libedusetõrjet sooladega, kasutada kattes kindlasti tihedat asfaltbetoonsegu, drenaaž peab olema korrektselt projekteeritud, ehitatud ja hooldatud; suurt tähelepanu tuleb pöörata katete õigeaegsele hooldusele, st et kattes oleks võimalikult vähe pragusid, auke ja roopaid (mis on ka liiklusohutuse seisukohalt üliioluline).

Katsetustega tuleks jätkata, vaid kahest katsest lõplike järelduste tegemiseks ei piisa. Oluline on ka määrata/täpsustada lubjakivikillustiku elastsusmoodul ning võimalusel siduda see materjali tugevusega (LA või survetugevus) ja terakoostisega, mis annab juba projekteerimise käigus katendeid arvutades võimaluse arvestada materjali omadustega.

Summary

Comparative Trial of the Gravel Base of a Road Surface Built from Eruptive and Sedimentary Rocks

According to Estonian Road Administration edict nr 133 it is required to use igneous rock LA25 in roads sub-bases where traffic amount exceeds 8000 cars/day. It is known that aggregate made from granite stone has better endurance to traffic and weather factors than limestone. In Estonia the main problem is that the granite is not local material, instead it has to be imported from another countries which raises it costs. That's why it is important to determine the differences between mentioned materials in identical conditions in the view of finding optimal usage both of them.

The study conducted in Tallinn University of Applied Sciences road laboratory (figure 1) where is possible to simulate traffic in controlled environment. Loading was applied by hydraulic cylinder; the steel loading plate had a diameter of 0,37 m. For both granite and limestone bases, cyclic loading tests were conducted. The cyclic loading waves were generated with a peak force of 86 kN and a trough force of 1,0 kN as shown in Figure 2. The frequency of this wave was 0,77 Hz. The peak load was selected to simulate a single wheel load of 86 kN (a contact pressure of 800 kPa).

There has been found that in the sense of road durability to loading the most critical points are asphalt concrete and sub-grade where all the overall settlement happened. Before and after the test aggregate grading was tested

and compared to determine material refining. Also elastic modulus was measured. Limestone refined in small scale and during the test elastic modulus decreased 14%, granite structure stayed constant and elastic modulus increased 24%. It has to be emphasized that only one test for both materials was conducted so especially values of elastic modulus are uncertain at the moment.
For thorough statements more tests are needed For the conclusion that can be do based to modeled conditions it can be say that there were little difference between behaviour of granite and strong (LA25) limestone. On most of the roads in Estonia amount of traffic is not so crucial yet, so with proper design, building and maintenance limestone can be used as road building material. Further investigations are needed to determine limestone proper elastic modulus. At the moment it is equal to granite based to our road design manual.

MAA-ALUSTE TEHNOVÕRKUDE ÜHTSE ANDMEBAASI LOOMINE EESTIS. EELUURING 2011. AASTAL

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Sissejuhatus

Tehnorajatiste kogumid ehk tehnovõrgud tagavad energiavarustuse, sideühenduse, veevarustuse, reo- ja sadevee kanalisatsiooni jms teenuste toimimise. Põhimõtteliselt on tegu transpordivõrgustikuga – st transporditakse energiat eri kujul – vett, infot jm. Optimaalne, efektiivne tehnovõrgustik tagab ühiskonna ja majanduse ladusa toimimise, loob aluse majanduslikuks ning sotsiaalseks arenguks. Tehnovõrgud on kogu infrastruktuuri oluline osa.

Kui kõik toimib, töötavad tehnovõrgud justkui märkamatult, probleemid tekivad siis, kui katkeb näiteks elektriühendus, side (Internet), gaasiühendus, veeühendus vms. Ühiskonna normaalsed protsessid sel juhul ajutiselt seiskuvad või on raskendatud kuni probleemi lahenemiseni. Siis saab mõistetavaks, kui tähtis roll on täita tehnovõrgustikul. Piltlikult on tehnovõrgud nagu inimorganismi veresooned või närvisüsteem. Tehnovõrgud jaotuvad tinglikult kaheks – maapealsed ja maa-alused tehnovõrgud.

Maa-aluste tehnovõrkude andmehaldus on teema, millega kuni 2010. a sügiseni ei oldud taasiseseisvunud Eestis laialdaselt tegeletud. Firmad ja omavalitsused on olenevalt vajadusest ja võimalustest loonud eraldiseisvalt geoinfosüsteeme oma hallatavate tehnovõrkude kohta, kuid nende käsutuses olev info on kohati ebatäpne ning kõigile on probleemiks selle killustatus. GISi ehk geoinfosüsteemi2 omavad suuremad tehnovõrkude valdajad ja neli Eesti omavalitsust – Tallinn, Tartu, Pärnu ja Narva.

2011. a kevadel algatasid Tallinna Tehnikakõrgkool ja K-Projekt AS eeluuringu teemal „Tallinna maa-aluste tehnovõrkude ühtse andmebaasi ja rakendustarkvara loomine". Selle eeluuringu eesmärk oli kaardistada üldised probleemid Eesti maa-aluste tehnovõrkude ja nende andmehalduse valdkonnas Tallinna näitel ning esitada ettepanekuid optimaalse olukorra saavutamiseks nii juriidilisest, süsteemsest kui ka infotehnoloogilisest vaatenurgast.

Summary

Establishing a Common Database of Underground Utility Networks in Estonia. Preliminary Study in 2011

On the period of April – October 2011 Tallinn University of Applied Sciences conducted a research on the topic "Creating a Unified Database and Application Software for Utility Networks in Tallinn". The workgroup found, that the biggest problem in Tallinn and in Estonia as a whole is the fragmentation of utility networks data. Each utility company possesses data about it's own utility networks only and local governments do not have complete data about their administrative area (only exception is City of Pärnu). There are also problems with the accuracy of old and new maps – it was found that copying from old maps to create new geodetical maps is a common practice and mistakes are made due to cost-cutting practices.

After consulting with the biggest utility companies, local governments and other interested parties, the workgroup found that Estonia would benefit from a single, centralised, utility networks database. Any party can then use the database to perform it's own services.

To implement a centralised database, further research must be performed and a nation-wide consensus on the matter must be reached. The workgroup recommended that a new study be made in order to determine an exact plan to implement a nation-wide centralised utility networks database.

EESTI RAHVUSKIVI DEKORATIIVSUSEST II
KARSTINÄHTUSTE OSAST LOODUSLIKE PAESEINTE JA -EHITISTE KUJUNDUSES

Rein Einasto, Tallinna Tehnikakõrgkooli professor, PhD

Kokkuvõte

Karristunud kärjelise mikroreljeefiga püstlõhede pinnad esinevad ainult paelasundi kõige ülemises osas – porsumisvööndis –, püsivast põhjaveetasemest kõrgemal, kus sademeveed lõhedesse valgudes paepinda valikuliselt lahustavad. Selle porsumisvööndi paksus piirdub paekõvikutel tavaliselt mõne meetriga, ulatudes vaid liigestatuma reljeefi korral tänapäevaste või maetud orgude veergudel mõneteist meetrini. Siit ka praktiline järeldus: loodusliku pitsilise mustriga paekivi ressurss on piiratud ja vajab säästlikku (kestlikku) kasutust.

Just need karristunud püstlõhepindadega väljamurtud paeplaatide seni jäätmetesse visatud servatükid võiksid meie paerikka pärandkultuuri kaasajastamisel leida sihipärast leidlikku kasutamist küla- ja linnaehituse mitmekesistamiseks, tuues lõigatud siledate külgedega „paetellistest" laotud seintesse hajutatult, karniisina või püstakuti paigutatult vahelduvat silmailu, elustades vanade meistrite aegadetagust loomingut. Selleks peaksid meie kõrgkoolid, eriti Eesti Kunstiakadeemia ja Tallinna Tehnikakõrgkool arhitektide ja ehitajate ettevalmistamisel moodsate üleilmaliste ehitusviiside kõrval sihiteadlikumalt kavandama aegumatute pärandkultuuriliste ehitusalaste püsiväärtuste süvaõpet mõlema traditsioonilise materjali – puidu ja pae – kasutusviiside rakendamisel. Praegused arhitektid tunnevad paekivi väga pealiskaudselt ega pea vajalikuks rahvuskivi mitmekesiseid dekoratiivseid omadusi uusehituses ega vanade hoonete restaureerimisel võimalustekohaselt rakendada. Siin on meil Eesti põhiseaduslike kohustuste elluviimisel – kindlustada rahvusliku kultuuri omanäolisuse kestmist läbi aegade – lähiaastail läbi käia suurte võimalustega rännak homsesse.

Summary

The Role of Karst Phenomena in the Design of Natural Limestone Walls and Buildings

The current article continues the discussion on the decorative aspect of the Estonian national stone (Einasto, 2010) and expands on the meaning of karst phenomena in the design of natural limestone walls and buildings. The decorative element of the stone is not only expressed in its colour, but also in its form and characteristics of the terrain. The unique originality of the natural limestone walls' surface is largely related to the karst phenomena; above all, to the storm water absorption into limestone layers through tectonic cracks and the selective dissolution of limestone layers that leads to the formation of limestone pavements (see photos). Karst as a phenomenon is a natural part of all alvars.

The natural expectancy for preserving limestone surfaces with the most decorative underfeatures is only carried by open vertical fissures' lateral surfaces where these are protected from physical weathering by the preserving action of clayey surface caved and washed into the cracks (photos).

The cracks, which have opened during karst processes in thousands of years, are present in the top layers of limestone bodies – in the zone of weathering, higher than the stationary ground water, where storm water selectively dissolves the limestone surface when draining into the fissures. The zone of weathering is usually only a few meters thick. Hence, the practical conclusion is that the resources of naturally patterned limestone are limited and require sustainable

usage. So far the layer edges of limestone plates with patterned surface have been thrown into waste when further processing the broken cliffs. However, these could find targeted resourceful use in enriching the architecture of our villages and towns in order to modernize our cultural inheritance. A good example here is the external walling of the new building of Pirita Convent.
Unfortunately, contemporary architects have only superficial knowledge of limestone and they do not consider it necessary to utilize the decorative qualities of the national stone. When training modern architects and construction engineers, higher educational institutions, especially the Estonian Academy of Arts and Tallinna Tehnikakõrgkool/University of Applied Sciences, should aim at a biased learning of the values of the timeless cultural inheritance of building in the interest of a more versatile use of the Estonia's national stone.