

# EUROPEAN UNION EMISSIONS TRADING SYSTEM'S IMPACT ON LATVIA'S COMPETITIVENESS

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## Abstract

The goal of this paper is to analyse the general impact of the European Union Emissions Trading System (EU ETS) on Latvia's competitiveness. The hypothesis of this paper – the EU ETS in past did not had a significant impact on Latvia's competitiveness. At the beginning of the paper the EU ETS mechanism is discussed in the context of M.E. Porter's identified principal factors determining state's competitiveness. Afterwards the EU ETS operation in Latvia is described and its impact on Latvia's competitiveness is analysed. The analysis is based on statistical data about Latvia's 79 companies and their operation in 2005-2010, *inter alia*, allocations and transactions of European Union Allowances (EUAs), changes of their fixed assets' values and used energy resources, as well as the results of the survey of Latvia's companies participating in the EU ETS.

*Keywords:* tradable permits' system, European Union Emissions Trading System, competitiveness.

*JEL Classification:* O44, Q56.

## Introduction

Latvia is covered by the framework of the European Union Emissions Trading System (EU ETS) and thus since 2005 many industrial installations located in Latvia has to comply with additional requirements imposed by the EU ETS, but at the same time are able to use the tradable permit's market established by the EU ETS. According to the estimations of the World Bank, the value of the EU ETS transactions' main currency – European Union Allowances (EUAs) – in 2010 was 119.8 billions USD (Linacre N., Kossoy A., Ambrosi P., 2011).

The goal of this paper is to analyse the general impact of the EU ETS on Latvia's competitiveness. The hypothesis of this paper – the EU ETS in past did not had a significant impact on Latvia's competitiveness. The main tasks of this paper are to collect the relevant data with respect to the EU ETS operation in Latvia and companies participating therein, determine and analyse their interconnectedness, *inter alia*, using methods of statistical analysis (dynamics analysis, correlation analysis etc.) and discuss the obtained results.

At the beginning of the paper the EU ETS mechanism is described and discussed in the context of M.E. Porter's identified principal factors determining state's competitiveness. Afterwards the EU ETS operation in Latvia is described by extracting, combining and analysing the data obtained from the official data base regarding companies registered in Latvia – *Lursoft* (annual data from 78 companies' annual reports), the official web site of the EU ETS and the official web site of its *Community Transaction Log* hosted by the European Commission (data about 108 installations and 754 transactions performed in 2005-2007) and leading provider of carbon credits markets' news and research – *Thomson Reuters Point Carbon* (data about EUAs each day's spot and forward prices in 2005-2010) as well as annual reports of installations participating in the EU ETS as published on the web site of the Latvian Environment, Geology and Meteorology Centre. Further the analysis of the EU ETS impact on Latvia's competitiveness with regard to the four principal factors identified by M.E. Porter is provided. For that purpose the already mentioned data sources are used in a combination with the results of the survey of Latvia's companies participating in the EU ETS, done by the author in 2011 (invitations for the participation in the survey were sent out to all participants of the EU ETS (in 2011 – 56 companies) and until 8 September 2011 34 responses were received, i.e. there were 61% responsiveness).

Taking into account the fact that the EU ETS became operation in 2005, within this paper the principal analysis is done for the period 2005-2010. The author has considered the EU ETS impact on its direct participants (owners of permits – potential sellers and buyers of permits).

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## The European Union Emissions Trading System in the context of State's Competitiveness

The EU ETS is the world's largest tradable permits' system, whereas a tradable permits' system is an economic instrument that establishes a tradable permits' market with an aim at minimal costs to achieve the rationalization of the volumes of certain assets denoted by permits. Operation of the EU ETS is structured into partly linked trading periods – first period was from 2005 to 2007, second is from 2008 to 2012, but third will start in 2013 and continue till 2020. Within the 1<sup>st</sup> period at least 95 % permits (EUAs) and within the 2<sup>nd</sup> period at least 90 % EUAs were allocated to its direct participants free of charge. EUAs must be used to annually fulfil an obligation to surrender EUAs equal to the total greenhouse gas (GHG) emissions, but they, however, can be also traded. (Directive 2003/87/EC, OJ L 275, 25.10.2003)

According to M.E. Porter, state's competitiveness depends on four principal factors, i.e. supply of resources (human resources, natural resources, potential of accumulated information, capital and infrastructure), internal demand (size and structure of internal demand, activity of media), clusters (number, types and sizes) and competition (intensity of the competition within a state) (Hibbert, 1997). Further the author shall discuss a relationship between the abovementioned four principal factors and the EU ETS.

The goal of the EU ETS is to ensure the reductions of the GHG emissions. Considering the principal causes of the GHG emissions, i.e. burning of fossil fuel, their reduction is possible either through conversion or improvement of used technologies (conversion from fossil to renewable energy resources or improvement of efficiency of their use) or through reducing an output. The author recognises that in most cases for an operational company the latter is not feasible. The author recognises that although the EU ETS is not creating any new natural resources, it is designed to liberate and enable fossil energy resources' to be used for other purposes as well as to enhance the access to renewable energy resources and therefore the EU ETS may influence the supply of resources, i.e. natural resources, capital and infrastructure.

The author recognises that the EU ETS needs to reduce the GHG emissions may also influence internal demand, especially internal demand's structure. In particular, the EU ETS is designed to increase the demand for renewable energy resources, e.g. biomass and biogas, and for fossil energy resources with relatively lower emission factor, e.g. natural gas, as well as to increase the demand for more efficient technologies using fossil energy resources and technologies using renewable energy resources. In addition, the author would like to note, that with regard to the energy resources available in the Europe, although the EU ETS is not an internal market's direct protection instrument, in fact, it very strongly fulfils this function, i.e. it encourages substitution of imported fossil energy resources (oil and natural gas) with locally available renewable energy resources such as biomass and biogas as well as water, wind, solar and thermal energy.

Similarly, in relation to the GHG emissions the author considers that the EU ETS may influence clusters, i.e. energy intensive clusters and because almost any technology requires energy use – clusters ensuring technological developments. Due to the EU ETS enhanced need to change energy sources as well as considering the EU ETS related incentives for technology development the clusters might be significantly changed and enlarged, reallocated or founded.

Finally, the author is convinced that the EU ETS may influence the competition within a state. The participants of the EU ETS are installations – power stations, combustion plants, oil refineries and iron and steel works, as well as factories making cement, glass, lime, bricks, ceramics, pulp, paper and board, but from 2012 it includes also the GHG emissions from air flights to and from European airports (Directive 2003/87/EC, OJ L 275, 25.10.2003.). However important to note that within these sectors some installations have to participate in the EU ETS mandatory but some are free to choose whether to participate therein or not. Thus different competing companies might have different conditions of operation.

Summarising the discussion above, the author concludes that the EU ETS may influence state's competitiveness. Moreover the EU ETS may influence the competitiveness of state in relation to both other states covered by the EU ETS (27 Member States of the European Union as well as Iceland, Liechtenstein, Norway) and states not covered by the EU ETS. Thus in order to analyse the EU ETS impact on Latvia's competitiveness further the author shall describe the EU ETS operation specifically in Latvia and for these purposes the author shall extract, combine and analyse data from *Lursoft*, *Community Transaction Log*, *Thomson Reuters Point Carbon* and annual reports of the EU ETS operators.

## The European Union Emissions Trading System's Operation in Latvia

Since 2005 in the EU ETS from Latvia have participated 78 companies and 1 municipal agency. The largest number of participants is in the first trading period of the EU ETS (2005-2010), whereas afterwards it decreases from 69 participants in 2007 to 60 participants in 2009 and 57 participants in 2010. Considering the fact that e.g. in 2009 in Latvia there were 172 634 economically active companies (data from Central Statistical Bureau) the author recognises that the EU ETS directly influences very small share of Latvia's companies.

The area of primary operation of 33 Latvia's companies (42%) participating in the EU ETS is an energy sector, which according to data about installations' capacity, in fact, by far is the most significant group of the EU ETS participants, i.e. in 2010 there were 44 installations with total nominal heat input capacity 6485,756 MW, including Latvia's largest thermal power stations owned by JSC "Latvenergo". Equal number of companies are industry sector, including the most significant producers of cement, glass, bricks, iron and steel, however their installations' capacity is significantly smaller (in 2010 there were 33 installations with total nominal heat input capacity 896,489 MW). 3 companies are from agriculture sector, 3 from transport-storage sector, 2 from water management sector, 2 from trade sector, 1 from construction sector and 1 from property management sector. The author acknowledges that considering the structure of the EU ETS participants, especially its significant presence in the energy sector, it has a potential of influencing all essential sectors of Latvia's economy.

Most of the participants of the EU ETS in Latvia are mandatory participants, e. g. in 2010 mandatory participants were 51 companies and there were only 4 voluntary participants and 2 companies which had both installations which were mandatory participants and installations which were voluntary participants. Considering the large proportion of mandatory participants and the fact that they are not able to withdraw from participation therein, the author recognises that the impact of the EU ETS on Latvia's economy is inelastic and is dependent on particular conditions applied to the participants of the EU ETS and their specific situation.

Analysing the overall conditions of Latvia's companies within the EU ETS it is important to note that the total free-of-charge allocated amount of EUAs is considerably larger than it is necessary to cover installations' total GHG emissions. In the 1<sup>st</sup> trading period Latvia's companies needed only around 70 % of EUAs that were allocated to them free-of-charge, but in the first part of the 2<sup>nd</sup> trading period (2008-2010) – around 92 %. However, at the same time there are also some companies which have not received enough number of EUAs – by the end of the first trading period there were no companies with deficits of the EUAs, but by the end of 2010 the actual deficits of EUAs had 13 companies. The author recognizes that considering on overall large over-allocation of free-of-charge EUAs the EU ETS does not impose significant constraints on its participants in Latvia and mostly is an opportunity to gain additional profits by selling surpluses of EUA, i.e. due to sufficient free-of-charge allocations of EUAs companies are not forced to invest in the GHG emission reductions and related technologies' conversion or improvement. However, notwithstanding the previously said, the author would like to note that there are particular cases, especially in the 2<sup>nd</sup> trading period, when the EU ETS might have fostered some changes within companies' operation (especially in companies which experienced deficits of EUAs and companies which were using very old and inefficient technologies). In addition, the author would like to point out that although the EU ETS in Latvia generally is not imposing direct pressure towards the need for the reductions of the GHG emissions, the fact that the EU ETS for Latvia's companies provided opportunities for gaining additional profits might as well contribute towards that.

The author has established that the first transaction (sale) of EUAs in Latvia was done at the end of 2005 (6<sup>th</sup> December), whereas since then up to the end of 2007 Latvia's participants of the EU ETS performed 236 inter-companies' transactions (199 sale transactions and 37 purchase transactions). The total volume of these transactions is 3 951 693 EUAs (3 313 534 EUAs sold and 638 150 EUAs purchased). The total value, according to author's estimations (assuming that the price of the transferred EUAs is the average price of EUAs spot contracts and EUAs forward contracts with deliveries by the end of 2007, 2006 and 2005, if feasible, on the date of transaction), is 70 022 383 EUR (61 979 981 EUR for EUAs sold and 8 042 402 for EUAs purchased) and total profit is 53 9375 80 EUR. However, according to the author's estimations just within the 1<sup>st</sup> trading period alone more than 2 million additional EUAs at the value of more than 20 million EUR (assuming that the EUAs are valued at the year when they are allocated or purchased, but unused) remained unused. Whereas one company (*Ltd. "Aurora Baltika"*) due to very unsuccessful trading strategy experienced severe losses, i.e. more than 1,5 million EUR. Analysing the frequency of

transactions and their character, the author has identified that most of companies in Latvia are following so called “compliance strategies” (strategies which primary are aimed at the fulfilment of legal obligations established by the tradable permits’ system, e.g. reduction of emissions till a particular prescribed level), and only one (Ltd. “*Latgales enerģija*”) generally is following “profit-making strategy” (strategy which is primary aimed at using tradable permits’ system for making additional profits whereas compliance with the mandatory requirements of the tradable permits’ is ensured mostly only to have a right to be a participant of the tradable permits’ system). With regard to the previously said, the author recognises that the EU ETS is a significant source of additional financing for Latvia’s companies and additionally earned financing might be used for technologies’ conversion or improvement, however Latvia’s companies are not enough actively using the possibility of trading within the EU ETS, whereas since there is no obligation for companies to disclose information on the use of profits from the trading within the EU ETS and it is almost impossible to verify the genuineness of the information provided by companies, it is very difficult to determine the actual uses of these profits.

Acknowledging the above said, the author concludes that through provision of additional financing as well as attracting everyone’s attention towards the need for the GHG emissions reductions, i.e. technologies’ conversion or improvement, the EU ETS might have influenced the competitiveness of Latvia. Further the author shall provide the discussion on the EU ETS impact on Latvia’s competitiveness with regard to the principal factors identified by M.E. Porter, except the factor of clusters, because there is no available data with regard to it. The author shall use the already mentioned data sources as well as the results of the survey of Latvia’s companies participating in the EU ETS, done by the author in 2011.

### **The European Union Emissions Trading System’s Impact on Latvia’s Competitiveness**

In order to establish the relationship between the EU ETS operation in Latvia and the principal factor – supply of resources – the author has distinguished profits / losses between an international trade and national trade with EUAs as well as analysed the data about companies’ investments in their fixed assets (assumingly – technologies) and data about their used energy resources. According to the research done by the author, assuming that the buyer is located in the state where its account of EUAs is opened, to the partners outside Latvia in the 1<sup>st</sup> trading period the direct participants of the EU ETS from Latvia sold 3 355 453 EUAs at the total approximate value of 49 345 930 EUR (almost 80 % of total sales of EUAs). The author recognises that although for a national scale this sum is small, for separate companies this is very significant amount of financing and could be very important source of investments. Further analysing the correlation between the value of companies’ fixed assets and the GHG emissions within the period of 2005-2010 the author has established that for 11 companies the correlation coefficient is above [-0,8], *inter alia*, 7 companies’ correlation coefficient is above [-0,9] and 3 companies’ correlation coefficient is above [-0,95]. The author recognises that this strong correlation between the increase of the value of fixed assets and the decrease of the GHG emissions most likely is due to the investments in technologies’ improvements or conversion from energy resources with relatively high GHG emission factor to energy resources with relatively low or “zero” GHG emission factor. Further analysing the data about companies’ used energy resources, the author has identified that most of companies are using natural gas. 2 companies participating in the EU ETS are using renewable energy resources (biomass) since the beginning of their participation in the EU ETS (JSC “*Jēkabpils labība*” and Ltd. “*Talsu BIO-enerģija*”, whereas 3 companies (Ltd. “*Wesemann Sigulda*”, Ltd “*Papīrfabrika “Līgatne”*” and JSC “*Cesvaines piens*”) within the 2<sup>nd</sup> trading period of the EU ETS have implemented partial conversion from fossil energy resources (natural gas and / or heavy fuel oil) to biomass. Interesting also to note that several other companies are using less energy resources while at the same maintaining or even increasing the levels of production, especially those which had high correlation between the value of companies’ fixed assets and GHG emissions, *inter alia*, JSC “*Balticovo*”, Ltd. “*Olaines ķīmiskā rūpnīca “Biolars”*”, Ltd. “*Rīgas laku un krāsu rūpnīca*”. However in some other cases when companies have started using more and more biomass there is no significant increase of the value of fixed assets, suggesting that they have simply switched from one energy resource to other without any significant investments in the technologies. The author recognises that there are some particular cases when most likely due to the EU ETS, the companies have implemented conversion from fossil to renewable energy resources thus providing incentives for the development and increase of biomass production. And this fully corresponds with the results of the survey of Latvia’s companies participating in the EU ETS, wherein 79 % of respondents recognized that the EU ETS is promoting the activities resulting in the GHG emissions’ reductions, *inter alia*, 21 % of respondents even indicated that the EU ETS is significantly promoting the

reductions of the GHG emissions, and almost 80 % of respondents revealed that within the periods of the EU ETS they have already implemented some activities resulting in the GHG emission reductions. Whereas asked to name the reasons for the planned or already executed activities for the reductions of the GHG emission in their company, 26 respondents indicated that they are side effect of other activities, e.g. modernisation of technologies, 9 respondents indicated that they are important to ensure compliance with the GHG emissions' caps within the EU ETS, 7 respondents indicated that it is necessary to acquire EUAs for storing and using them in the further years, but 5 respondents admitted that the reduction of the GHG emissions are necessary to acquire EUAs for the sale.

With regard to the above said, acknowledging the fact that the EU ETS has helped Latvia's companies to earn additional financing from abroad as well as the fact that the EU ETS has facilitated the conversion from fossil energy resources to biomass as well as improvement of existing technologies, the author concludes that although there are clear signs that the EU ETS is increasing the supply of resources, this increase, however, is small both in respect to the EU ETS operation scale in Latvia and Latvia's economy in general and therefore is to be considered as insignificant.

The principal factor – internal demand – to author's opinion, as already explained in the first section of this paper, in the case of the EU ETS is very closely linked to the previously analysed principal factor, i.e. supply of resources. The author would like to once again to emphasise the significance of the conversion from fossil to renewable energy resources. The author would like to note that there is no fossil energy resources' extraction in Latvia and all fossil energy resources that are used in Latvia are imported; however there is a large potential of renewable energy resources in Latvia, especially biomass. Therefore, according to the author's opinion, the promotion of the use of biomass is a direct support towards the increase of the internal demand.

Acknowledging the above said, the author concludes that the EU ETS has slightly increased Latvia's internal demand for biomass, however this increase is small both in respect to the EU ETS operation scale in Latvia and Latvia's economy in general and therefore is to be considered as insignificant.

In relation to the principal factor – competition – the author would like to note that to a certain extent the EU ETS is reducing the competitiveness of its participants in relation to companies not participating in the EU ETS, especially companies outside the Europe, however at the same time due to the investments in technologies' overall improvement the companies participating in the EU ETS, in fact, might become more efficient, more competitive. In addition, important to take into account a fact that Latvia's industry sector's companies in comparison to energy sector's companies, which have rather exclusive status in the national economy (they are almost none-substitutable), in general are experiencing more difficulties with including the costs of the GHG emissions' reductions or purchases of EUAs in their product prices, and therefore are at especially vulnerable situation with regard to internal competition within their sectors of operation. The survey demonstrates that although some does not respond (15%), the majority answers that until the end of the 2<sup>nd</sup> trading period of the EU ETS the EU ETS has not and will not influence their competitiveness, but afterwards the EU ETS will either slightly improve (18%) or slightly decrease (26%) their competitiveness, whereas 6% are convinced that the EU ETS will considerably improve their competitiveness.

Respecting the results of the survey and considering the overall rationale behind the idea of the GHG emissions' reduction and technologies' improvement, the author concludes that the EU ETS is increasing the competition, however with regard to Latvia this increase is mostly related to international competition. Currently there is almost no competition between Latvia's energy sector companies, whereas most of other companies participating in the EU ETS are either so large for the scale of Latvia or so unique for Latvia that internally in Latvia they have almost no competitors.

## Conclusions

The hypothesis of this paper suggests that the EU ETS in past did not had a significant impact on Latvia's competitiveness. The survey of Latvia's companies participating in the EU ETS demonstrates that although many respondents are not sure about the EU ETS impact on state's competitiveness (53%), the majority of the rest (38%) are convinced that the EU ETS improves Latvia's competitiveness and only 9% holds a view that the EU ETS reduces Latvia's competitiveness. However considering in the previous sections summarised analysis of the EU ETS operation in Latvia both in system's level and particular companies' level from the perspective of the principal factors identified by M.E. Porter, the author concludes the following:

1. The EU ETS may influence state's competitiveness.
2. In past the EU ETS did not significantly influence Latvia's competitiveness, because although the EU ETS in Latvia has facilitated the supply of resources and internal demand, therein created increase is small both in respect to the EU ETS operation's scale in Latvia and Latvia's economy in general and therefore is to be considered as insignificant.
3. The significance of the EU ETS with regard to Latvia's competitiveness in future might increase.

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