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Abstract: The interaction between economic integration and environmental policy has become an important issue in the last few years. Despite the considerable scholarly attention this topic attracted, actual government responses in terms of environmental policy outputs remain largely untouched by both theoretical and empirical work. To fill this gap, we suggest a theory-based disaggregation of the compound variable economic integration for deriving more precise expectations on its differential impact on environmental policy arrangements. In doing so, we show that economic integration may indeed trigger an upward movement – at least regarding the level of environmental policy setting. To illustrate our arguments empirically, we present evidence from Turkey. The analysis of the development of Turkish clean air policy from 1975 to 2005 highlights a regulatory expansion. At the same time, however, the emission of air pollutants increased as well. Consequently, we offer a differential interpretation of how environmental policy setting and enforcement are related to sustainable development.

1. Introduction

In the last three decades, a growing number of both industrialized and industrializing countries have decided to open their economies and conduct liberal trade policies. While the acceleration of international trade was initially regarded against the background of industrial development and income growth, gradually concerns emerged about negative impacts on the environment. The focus of this discussion has been on whether countries engage in an environmental 'race to the bottom' by deliberately setting environmental protection standards at low levels to attract international capital [1]. This scenario has been associated with a loss in the level of environmental quality and consequently with an increase in social costs. Policy-makers in industrializing countries, by contrast, have expressed fears that the links between trade policy and environmental policy are used by industrialized countries to erect barriers to trade [2]. These concerns are currently, for instance, present in the public debate surrounding the creation of the Free Trade Area of the Americas.

As a result, the interaction between trade policy and environmental policy triggered a scientific debate, in which both the commercial impact of environmental policies [3] and the environmental impact of trade policies [4] have been considered. Despite the large size of the literature, the evidence on the impact of economic integration on environmental policy choices often produces contradictory findings making cumulative research difficult. This study reviews some of the theoretical concepts related to economic integration and illustrates them by using data on environmental policy change in Turkey from 1975 to 2005. To evaluate the causal relationship between economic integration and environmental policy-making in terms of sustainability, we focus on both environmental policy setting and enforcement. As a result, we examine two dependent variables, namely changes in the strictness of environmental policy measures regulating air pollution control and actual air pollution through the emission of carbon dioxides (CO_2). Our findings show that an increasing integration of the Turkish economy into global markets led to more stringent air pollution regulations. At the same time, however, economic integration is associated with increasing CO_2 emissions. We hence conclude that the relationship between economic integration and environmental policy-making is a complex one, particularly in the case of emerging market democracies.

Of course, environmental standards are primarily determined by domestic political preferences: usually, they tend to be stricter in more affluent nations with influential green pressure groups [5]. Yet, in this paper we adopt a so-called x-centred research

perspective. This implies that instead of explaining the entire variation of the dependent variable, we rather estimate the partial effect that one particular explanatory variable – here economic integration – has on the dependent variable [6].

As concerns the definition of economic integration, we concentrate on three aspects. The first and most rampant definition of economic integration refers to rising international trade and investment flows. The second concept of economic integration takes up the specific trade patterns among countries and focuses on increased trade and investment flows with a particular group of countries. Third, economic integration can be understood as the creation of institutions facilitating cross-border economic flows.

Depending on the concept selected, the environmental policy implications of economic integration are likely to change due to different causal mechanisms related to it. Against this background, we introduce regulatory competition, economic conditionality, and international harmonization as central concepts for disentangling the environmental impact of economic integration. Regulatory competition explicitly models the policy implications of rising competition for trade and investment, whereas economic conditionality pays attention to the regulatory consequences of trade with industrialized, 'high-regulating' countries for industrializing, mostly 'low-regulating' countries. Finally, the mechanism of international harmonization highlights how economic institutions shape the member states' and accession candidates' environmental policies.

This paper is structured as follows. First, we introduce the theoretical arguments related to the environmental policy impact of economic integration. On the basis of this discussion we formulate theoretical expectations regarding the likelihood and direction of changes in environmental policy setting and enforcement. Second, we illustrate the plausibility of our arguments by examining the case of Turkish air pollution regulations and their implementation. Subsequently, we summarize our main findings and present a brief conclusion, in which we interpret our findings against the background of the sustainability concept.

2. Theoretical Arguments on Economic Integration

With increasing economic integration across countries and the emergence of global markets, more attention has been paid to the extent to which domestic regulatory policies are affected by trade relations. Several studies analyzed the relationship between trade liberalization and environmental policy, focusing in particular on the question whether

industrialized countries face ‘environmental dumping’. By contrast, only limited attention has been paid so far to the effects of international economic integration on environmental standards in countries that are still in the process of economic transformation, namely emerging market democracies. This paper explicitly focuses on the latter perspective and analyzes the effects of economic integration on environmental protection levels in low-regulating countries that intensify their economic interlinkage with industrialized, high-regulating countries.

Generally, industrializing countries are associated with a regulatory ‘stuck at the bottom’ [7]. However, the empirical literature does not allow for easy conclusions. In fact, there is also strong evidence refuting the hypothesis that economic integration undermines environmental protection standards [5, 8, 9, 10]. Why is it so difficult to assess whether economic integration is either positively or negatively correlated with stricter protection standards? We argue that besides differing notions of ‘environmental policy’, the main impediment to a more thorough understanding of the impact of economic integration stems from different conceptualizations of the focal explanatory variable. Some authors conceive of economic integration only in terms of increased competition for international trade and investment [11]. Other contributions focus on regulatory harmonization within the context of institutional economic integration, e.g. accession to the European Union (EU), which confronts national policy-makers with other pressures than mere competitiveness considerations [12]. A third group of empirical works analyzes the effects of environmental provisions included to free trade agreements [13].

Of course, this plurality in the conceptualizations of economic integration is necessary and corresponds to its complex character. However, it is often overlooked that different concepts also necessitate completely different theoretical underpinnings to produce sound explanations. Consequently, the empirical findings are limited in their comparability. To remedy this situation, we propose to disaggregate the causal mechanisms underlying the different forms of economic integration and to formulate more clear-cut expectations about the direction of environmental policy change induced by economic integration.

A primary interest in competition for international trade and investment would suggest the use of the theory of regulatory competition, whereas economic conditionality is an appropriate concept when the focus is on the direction of trade flows. Moreover, international harmonization helps to understand the implications of economic integration through the creation of common institutions. These concepts originate from the literature on cross-national policy convergence [14, 15]. Their analytical use, however, reaches well

beyond this particular area and allows us to explain environmental policy change in more general terms.

2.1. Regulatory Competition

Regulatory competition is associated with the importance of attracting foreign capital and improving the competitive position of the domestic economy. This concept refers to the definition of economic integration as increased cross-border activities. It hypothesizes that the international mobility of goods, workers and capital puts pressure on the nation states to redesign domestic market regulations in order to avoid regulatory burdens restricting the competitiveness of domestic industries [16]. The pressure arises from (potential) threats of economic actors to shift their activities elsewhere. Politicians behaving as rational actors seek to attract investments, for instance, in order to create or preserve working places. This way, regulatory competition clearly predicts a race to the bottom in policies, implying that industrialized, high-regulating countries lower their standards for approaching those of industrializing, low-regulating countries [17]. Equally, industrializing countries might be reluctant to tighten their protection standards in order to preserve their comparative advantage, implying a stuck at the bottom scenario [7, 12].

Theoretical work, however, suggests that there are a number of conditions that may drive the stringency of domestic environmental policy in both directions [5, 18, 19]. In this context, particular emphasis is placed on the distinction of different types of environmental regulations, namely product standards and process standards. Product standards define regulatory requirements for the quality and specific characteristics of traded goods like passenger car emissions. Two conditions can avoid downward dynamics of national product standards. First, competition between products might not only be based on their price, but also on their quality. If quality aspects dominate, stricter standards will constitute a competitive advantage, hence implying a ‘race to the top’ [5]. Second, downward pressures can be avoided, if trade rules allow individual countries to erect exceptional trade barriers for products which do not comply with national environmental standards. Such measures are, for instance, possible within the trade regimes of the World Trade Organization (WTO) and the EU.

Process standards, by contrast, refer to the conditions under which certain goods are produced. Typical examples of process standards are sulphur dioxide or nitrogen oxide emission standards for large combustion plants. Strict standards demand filters, which

raise production costs. Then the domestic steel industry, for example, suffers from a competitive disadvantage against the steel producers abroad, if the latter need not apply the same strict standards. In order to avoid such a disadvantage, governments may want to decrease their standards to the level of other countries. The expectations for the direction of changes in process standards are therefore less optimistic than for product standards [19]. However, there is also empirical evidence showing that the level of process standards may also increase over time, but even these analyses into account additional factors, such as transnational communication [8, 9, 10, 20]. Nevertheless, the competitive pressure underlying regulatory competition should more likely induce the prevalence of a low regulatory level in emerging market than a regulatory expansion. Accordingly, we expect that the isolate impact of regulatory competition on environmental protection standards leads to the persistence of the *status quo* [11].

In this context, we must also take into consideration that the protection levels in emerging market democracies may remain low due to insufficient implementation and enforcement [5, 7]. Konisky (2007) [21], for instance, argues that governments might have the motivation to attract economic investment through their enforcement of pollution control regulation. Using a panel dataset of state-level enforcement of US federal air and water pollution control regulation, he shows that a state's choice about its level of environmental enforcement is a function of similar choices in states with which they compete for economic investment. This finding provides evidence that race to the bottom-type dynamics affect the environmental enforcement behaviour of some US states. Similar dynamics are observed for the relationship between environmental rule setting and actual enforcement and compliance efforts in Hungary and Mexico [12, 22].

To sum up, the theory of regulatory competition is helpful for understanding how competitive concerns may induce policy-makers to lower or to preserve low environmental protection standards. Regarding the practical application of environmental protection standards, there is good reason to hypothesize that regulatory competition is likely to lead to the preservation of low policy enforcement efforts in emerging market democracies in order to reduce the regulatory burden. Accordingly, we formulate the following two conjectures with regard to the consequences of regulatory competition on environmental policy arrangements in emerging market democracies.

Conjecture 1a: Regulatory competition leads to the prevalence of the regulatory *status quo*.

Conjecture 1b: Regulatory competition induces low regulatory enforcement efforts.

2.2. Economic Conditionality

An important modification to the theory of regulatory competition has been proposed by Vogel (2000) [5], who argues that the erection of trade barriers might not only avoid a race to the bottom, but even induce an upward dynamic between national regulations. He observed this development for the regulation of car emission standards in the US. When California raised its emission standards, most US states followed quickly for two reasons. First, California was permitted to apply its standards to foreign car producers. Second, since licensing procedures for cars are very expensive, car producers wanted to avoid multiple arrangements and hence demanded harmonized requirements throughout the US. Based on this observation, the upward ratcheting of regulatory standards is known as the 'California Effect'.

In a nutshell, the California Effect stipulates that economic integration can trigger an upward adjustment of regulatory policies in (originally) low-regulating countries. This is most likely, if low-regulating countries aim at integrating their economies with high-regulating countries that possess more advanced regulatory systems. Given their weak economic position and the – compared to high-regulating countries – much higher relative welfare gains associated with economic integration, low-regulating countries are generally more dependent on intensified trade relations as their more wealthy counterparts. This holds particularly true, if the latter have already well-established free trade regimes with each other, such as in the case of the EU.

In this vein, the California Effect touches upon the growing interference and influence of the state government in economic affairs since a somewhat paradoxical consequence of economic liberalization is the increase of public intervention in the economy and the proliferation of rules. As a result, the enhanced activities of regulatory policy-making do not only emerge at the national but also at the global level. In turn, this facilitates governments of high-regulating countries to gain domestic political support for free trade agreements with low-regulation countries [23].

Following this logic, market incentives can also trigger a strengthening of process standards of industrializing countries, if three conditions are met: First, the practices have to be targeted by domestic political or economic pressure groups in a 'green', i.e. high-regulating, country; second, the producing country should seek to enter a free trade agreement with a green country, or be already a member of it; third, the production process should be covered by an effectively enforced international environmental agreement. While the California Effect is generally treated as a refinement of the theory of

regulatory competition, we argue that it refers to another causal mechanism, namely economic conditionality.

Economic conditionality thus occurs, when a country needs to adopt certain environmental policies in order to become a member of a free trade agreement or to gain access to the market of green jurisdictions [9, 10]. Depending on the degree of power asymmetries between the countries seeking market access, high-regulating countries might also be able to render further economic integration with low-regulating countries dependent on the adoption of respective process regulations. To protect the competitive position of their economies, they can factually impose the adoption of stricter regulatory standards in low-regulating countries in exchange for intensified trade relationships. In other words, there is an exchange of economic resources for the adoption of stricter environmental policies. Thus, economic conditionality constitutes incentives for low-regulating countries to adjust their regulatory arrangements upwards. This particular mechanism also implies that a country is forced to adopt a certain model without much leeway of modifying it. As a consequence, it can generally be expected to lead to a high degree of similarity of the policies present in the submitting and the imposing country.

Various empirical examples underline the validity of this argument. Borregaard et al. (1999) [24] argue that the strengthening of Chilean environmental regulations *inter alia* resulted from repeated pressures of the US government and its decision to decrease imports of copper products because of low protection standards. Garcia-Johnson (2000) [8] finds that Brazil and Mexico adopted US environmental practices. However, the Brazilian approximation to US legislation was notably smaller due to the countries large domestic market and its intensifying trade relations with the countries of the South Cone. The relevance of specific trade patterns is also underlined by the fact that many governments of the Commonwealth of Independent States have expressed their willingness to adapt their environmental legislation to European standards. “This interest is driven by the general economic and political orientation towards the EU, which is their most important foreign trading and investment partner […]” [25]. Also as a result of the involvement with the international market, the Czech Republic, Poland, and Bulgaria decided to adopt EU chemical safety legislation [26]. Along the same lines, Prakash and Potoski (2006) [4] show that trade creates incentives for firms in developing countries to introduce the relatively costly ISO 14001 management system, if trade occurs with countries whose firms have adopted a progressive environmental programme.

In sum, the concept of economic conditionality explains, why increased economic integration with industrialized countries may induce governments of industrializing countries to introduce stricter environmental protection standards. Modelling asymmetries in terms of political and economic power, it also allows for explaining why industrialized countries do not lower their protection standards. The EU and the US hence benefit from the large size of their internal economic markets, which turns them into regulatory 'price-makers' [27]. In this sense, low-regulating countries are not confronted with competitiveness pressures but rather with the threat of losing permanent access to attractive markets. In other words, the pressures stemming from increased competition for trade and investment translate into a pressure arising from economic conditionality.

The impact of economic conditionality on governmental enforcement efforts is less unambiguous. In case that trade relationship are accompanied by sufficient monitoring arrangements and therewith the risk of being exposed as an unreliable partner, economic conditionality should lead to increasing enforcement efforts. If the monitoring arrangements are underdeveloped or even absent, low-regulating countries might again try to counter-balance the costs emerging from stricter regulations through persistently low enforcement efforts [12, 28]. Since most bilateral or multilateral trade arrangements lack well-developed monitoring instruments, the incentives for governments of transformation countries to engage in relatively low enforcement activities is the most likely result. Of course, there may be variation among the individual trade arrangements, but on average the monitoring capacities can be realistically assumed to be quite low. Consequently, stricter environmental protection regulations should not entail a genuine improvement of the environmental quality. The different effects of economic conditionality on environmental policy-making are summarized by the conjectures 2a and 2b.

Conjecture 2a: Economic conditionality leads to an increase in the regulatory level.
Conjecture 2b: Economic conditionality induces low regulatory enforcement efforts.

2.3. International Harmonization

There are still stronger forms of economic integration, which offer their members even more effective ways for avoiding an environmental race to the bottom. Membership in an international economic institution may prevent competitiveness pressures to emerge through the mechanism of international harmonization. International harmonization refers

to a specific outcome of international cooperation, in which the countries involved are required to comply with uniform legal obligations defined by free trade agreements, their side agreements, or international or supranational law. International harmonization is generally traced to the existence of interdependencies or externalities which push governments to resolve common problems through cooperation within international institutions, hence sacrificing some independence for the good of the community.

Once established, these arrangements constrain and shape the domestic policy choices, even as they are constantly challenged and reformed by their member states [29]. The idea is to neutralize comparative advantages stemming from regulatory differences by creating a 'level playing field'. With regard to environmental policy, several factors favour that international harmonization implies an overall increase in the strictness of regulatory levels, i.e. a compromise that is closer to the strictest rather than weakest regulatory level found in the member states of the international institution in question.

First, it has been argued by several authors [5, 18, 19] that in certain constellations those countries preferring stricter levels of environmental regulation are more influential in international negotiations, implying that international harmonization takes place at the top rather than the bottom level. This argument has been developed in particular for product standards. In this case, all member states (regardless of their preference for strict or weak standards) share a common interest in international harmonization in order to avoid market segmentation as a result of different national product requirements. While all countries share a common interest in harmonization, those states with a preference for strict standards are in a stronger position to put through their preferences in international negotiations. The trade regimes of the EU and the WTO – for reasons of health and safety protection – allow high-regulating countries to ban the import of products that are not in line with the strict domestic standards. As all countries share an interest in international harmonization, high-regulating countries are therefore in certain cases able to unilaterally impose their strict standards as the international rule [27]. Based on this argument, we should expect that – at least for product standards – international harmonization implies an upward shift of the regulatory mean.

Second, especially for harmonization at the EU level, additional structural features of the policy-making process might favour an upward shift for other policy types (production standards and non-trade-related policies), for which the above-mentioned interest constellation favouring harmonization at the top does not apply. The fact that we observe European harmonization at the top rather than at the bottom of existing member state

regulations also in these areas has been explained by particular dynamics emerging from a regulatory contest in influencing EU policies between the member states [30]. These dynamics emerge from the interest of national governments to minimize institutional costs of adjusting domestic regulatory arrangements to EU policy requirements. Especially high-regulating countries with a rather comprehensively and consistently developed regulatory framework of environmental policies and instruments might face considerable problems of adjustment, if European policies reflect regulatory approaches and instruments that depart from domestic arrangements. As a result, these countries have a strong incentive to promote their own concepts at the European level. In so doing, the most promising way is to rely on the strategy of the 'first move', i.e. to try to shape European policy developments already during the stages of problem definition and agenda setting. This requires that member states have to win the support of the EU Commission, who has the formal monopoly to initiate policies at the EU level. The Commission, in turn, is generally interested in strengthening and extending supranational policy competencies. As a consequence, only those domestic initiatives that fit with these objectives of the Commission have a chance to succeed. This specific interaction of national and supranational interests favours the development of innovative and ambitious policies at the EU level, hence driving EU harmonization more towards the top rather than the bottom of domestic regulation levels [31].

Third, even if we assume that the final agreement only lies in the middle between high-regulating and low-regulating countries, there is still a high probability that the mean of national regulatory levels becomes stricter. This can be traced to the fact that the by far largest part of environmental standards follows the principle of minimum rather than total harmonization. In the case of minimum harmonization, it is still possible for countries with a preference for higher regulatory levels to enact standards beyond the minimum level specified in international agreements. In contrast to total harmonization, deviations to the top are therefore still possible, while countries with lower standards are obliged to raise their standards at least to the international minimum level. Given the dominance of minimum harmonization, we thus predict that international environmental policy harmonization is likely to result in shifting the regulatory mean upward. This expectation rests on the assumption that not all high-regulating countries will lower their standards towards the minimum level.

As concerns the empirical findings, the comparative analysis of 40 environmental policy items in 24 countries carried out by Holzinger, Knill and Arts (2008) [14] and Holzinger,

Knill and Sommerer (2008) [15] reveals that EU membership is positively correlated with changes in policy stringency. Further, Knill and Tosun (2009) [32] highlight that international harmonization is the most effective way of achieving a tightening of regulatory standards vis-à-vis other mechanisms, such as, for example, economic conditionality. Their results also show that not only member states but also accession candidates adopt European legislation. Accordingly, both states already being members of the EU and accession candidates are likely to expand their environmental policy arrangements by adding European legislation.

The compliance costs of international harmonization should, however, not be underestimated. Andonova (2004) [26] shows that the implementation effectiveness of European air pollution legislation across the Czech Republic, Bulgaria and Poland varies to a notable extent. We hence should not expect that international harmonization also leads to a more sustainable development in stricter terms. To be sure, there is a newly developing research perspective on post-accession compliance in the 'new' member states of the EU [33]. Still, the monitoring capacity of the EU is stronger than in the case of any other international organization. For example, the Commission prepares annual reports on the application of community law. In this vein, it makes public the transposition behaviour of the individual member states and therewith represents a considerable potential for so-called reputational costs. Therefore, we expect that EU integration is associated with more stringent environmental protection standards and increasing regulatory enforcement efforts.

> Conjecture 3a: International harmonization leads to an increase in the regulatory level.
> Conjecture 3b: International harmonization induces increasing regulatory enforcement efforts.

3. Empirical Illustration: Environmental Policy Developments in Turkey

To enliven the points raised above, we now present an empirical illustration of the theoretical arguments. To this end, we explore the development of environmental policy setting in Turkey between 1975 and 2005. Broadly speaking, the 1980s represent a turning point in the Turkish economy, which up to that decade was a closed system, largely corresponding to the ideal of an import substitution economy. Thanks to a steady expansion of trade in goods and services, Turkey has become highly integrated into the world economy. The country's share of EU-oriented exports has been growing and so has

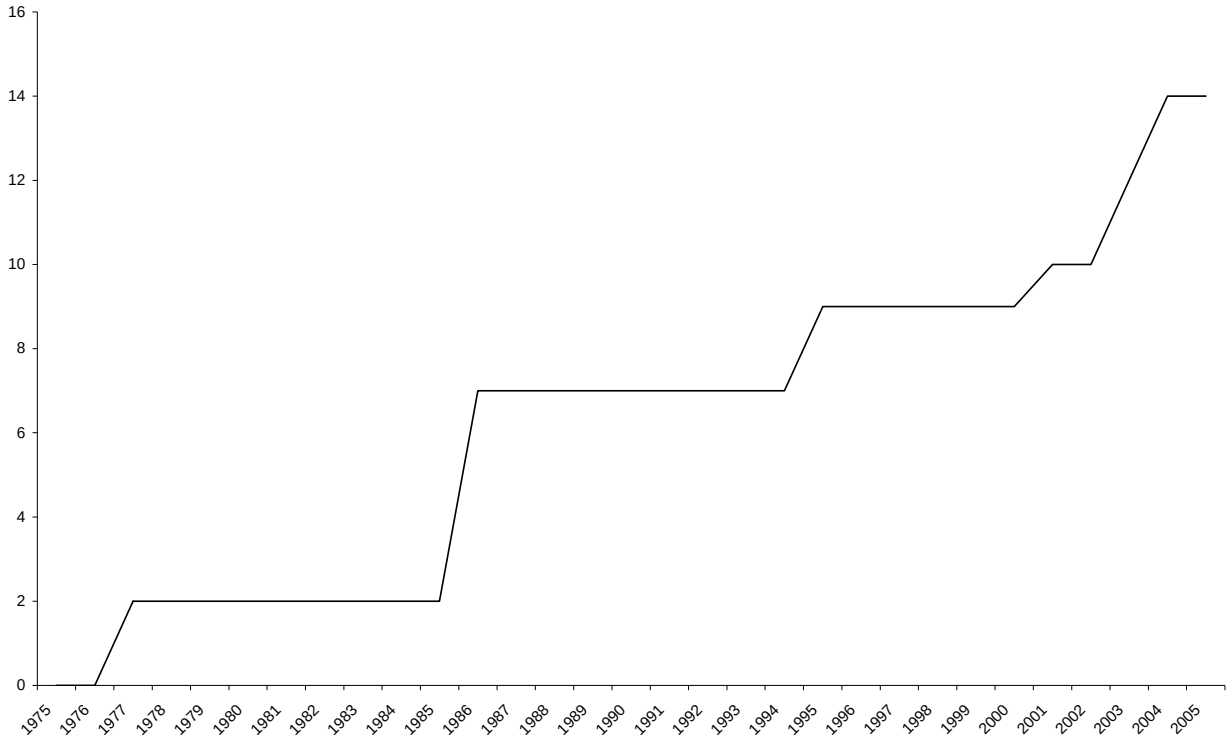
its attractiveness for foreign investment [34], although is it still falls behind other emerging democracies as concerns of volume of foreign direct investments attracted. In addition, Turkey was officially recognized as a candidate for full EU membership on 12 December 1999 at the Helsinki summit of the European Council. Due to the considerable variation in the focal explanatory variable over time, the country provides an ideal case for illustrating the environmental policy effects of economic integration.

3.1. Description of environmental policy change

To measure environmental policy change we focus on one essential policy subfield, namely legislation related to combating air pollution, which has already turned out be represent a crucial regulatory area for evaluating environmental policy change [26]. We evaluate the strictness of air pollution regulations on the basis of legislative outputs, i.e. legal acts. To this end, we base our measurement on the concept of 'regulatory density', which describes the extent to which a certain policy area is covered by governmental activities. Regulatory density tells us something about the legislative penetration and internal differentiation of a policy field, subfield or specific policy item. The dimension of regulatory density hence measures the extensiveness or breadth of governmental intervention. Any increase in regulatory density indicates policy expansion; any decrease, by contrast, can be interpreted as policy dismantling. To be able to judge whether we are confronted with policy expansion or dismantling we must define a reference point. In this sense, the year 1975 forms the baseline since at this point in time hardly any air pollution regulations existed in Turkey.

More precisely, we generate a variable which approximates changes in the regulatory strictness through the cumulative number of legal acts with an 'expansive' character. To be sure, none of the legal acts coded abolished an already existing air pollution measure. The data is original and had been collected by the research teams of the CONSENSUS project ('Confronting Social and Environmental Sustainability'), which is funded by the European Commission with the Seventh Framework Programme. Figure 1 exhibits the changes in the cumulative number of legal acts.

Figure 1 Cumulative number of air pollution regulations (1975-2005)



We can easily infer from the figure that over the observation period the regulatory level increased steadily. A relative regulatory stability is only observable for the early observation period, i.e. until 1986. The policy adoption curve, however, becomes even steeper in the 2000s, reflecting the adoption of several European directives. In fact, in 2001, the Turkish government adopted a national programme for the adoption of the *acquis communautaire* on the basis of the Accession Partnership. Since the *acquis communautaire* also comprise a considerable number of European environmental policies, the adoption of the national programme is closely interlinked with increased environmental policy activities. The majority of EU directives on clean air policy adopted by the Turkish policy-makers principally comprise prescriptions related to motor vehicles and fuel characteristics, such as the regulation of the quality of petrol and diesel fuels (see 2003/17/EC and 98/70/EC).

3.2. Description of changes in environmental policy enforcement

To examine whether an increase in the cumulative number of air pollution regulations is paralleled by an actual improvement of the air quality, we rely on data on the change of CO_2 emissions per capita (given in metric tons) over the observation period. The data was

taken from the World Development Indicators of the World Bank. We are well aware that the use of such data is problematic as concerns the lacking possibility to control for intervening variables and the absence of standardized measurement guidelines. This also implies that changes in CO_2 emissions per capita must not perfectly correlate with governmental enforcement efforts. Yet, regarding the case of Czech water policy Earnhart and Lizal (2008) [35] show that the variation of environmental policy outcomes indeed correlates with the variation of environmental policy outputs. Hence, for the strictly illustrative purpose of this study we argue that these data are appropriate for evaluating the relationship between economic integration and sustainability. Figure 2 exhibits the development of CO_2 emissions over time.

Figure 2 Per capita emission loads of CO_2

The figure clearly reveals that the CO_2 emission loads in fact increased over time. Of course, there are some moments of pollution reduction (i.e. in 1977-1980; 1986 and 2001-2002), but these did not persist in the long-run. Consequently, the overall pollution levels increased steadily. From this empirical picture we can carefully derive the conclusion that stricter regulations do not automatically translate into lower pollution levels, which might stem from low enforcement efforts. To be sure, the problems related to the implementation

and enforcement of newly adopted environmental policy measures has also been highlighted by the Commission's 2004 Regular Report on Turkey [36].

In this context, Kalaycioglu and Gönel [37] emphasize that business sectors are often involved in corrupt practices and pay bribes in order to lower the burden of enhanced regulatory burden. This might explain, why in the Turkish case stricter air pollution regulations are associated in an increasing emission of CO_2. Another – theoretically more grounded – reason could be that forces encountering weak enforcement efforts, e.g. accession to the EU, do not produce significant coefficients and are therefore not systematically effective. We systematically evaluate this perspective in the subsequent section.

3.3. Explaining Change

How can we explain these findings? To answer this question we must first operationalize the three concepts associated with economic integration. For evaluating whether regulatory competition is effective we rely on two variables. The first variable is *Trade Dependence*, which indicates how strongly a country relies on exports. It is calculated as the percentage share of exports on the gross domestic product (GDP). The data was taken from the World Development Indicators of the World Bank. The second variable is *FDI*, which indicates foreign direct investment (FDI) inflows per capita measured in US dollar at current prices. The data was extracted from the FDIStat database.

For evaluating the effectiveness of economic conditionality, we use data on the Turkish exports directed at industrialized states. The data for the corresponding variable *Exports to Industrial States* were taken from the Direction of Trade Statistics of the International Monetary Fund, which conveniently provides information on the patterns of trade.

Finally, the variable *EU* is related to international institutional integration within the context of the European integration. It is a binary variable that takes the value 1 for each observation after 1999 since Turkey then had received the status of an accession candidate. For the years predating 1999, the variable takes the value 0. Table 1 presents the summary statistics for the explanatory variables.

Table 1 Summary statistics of the explanatory variables

Variable	N	Mean	Standard Deviation	Minimum	Maximum
Trade Dependence	31	15.39	7.13	3	27
FDI	31	14.2	25.38	.24	137.47
Exports Industrial States	31	.047	.032	.01	.127
EU	31	.226	.425	0	1

In a second step, we calculate Pearson correlation coefficients since the number of observations is too small to run more powerful estimation models for count data. The Pearson correlation coefficient ranges from (-1) to 1. A value of 1 indicates that there is a perfect positive linear relationship between two variables, with all data points lying on the same line and with *Y* (dependent variable) increasing with *X* (independent variable). A score of (-1) shows that all data points lie on a single line but that Y increases as X decreases. A coefficient with the value 0 shows that there is no linear relationship between the variables. Table 2 presents the Bonferroni-corrected correlation coefficients of the four explanatory variables and the two dependent variables.

Table 2 Correlation Coefficients

Variable	Regulatory output	Regulatory outcome
Trade dependence	0.8512***	0.8800***
FDI per capita	0.6423***	0.5913***
Exports industrial states	0.9432***	0.5913***
EU	0.6713***	0.6739***

Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Remarkably, all explanatory variables are significantly and positively correlated with both the regulatory output (i.e. the changes in the regulatory strictness) and outcome (i.e. the changes in air quality). This implies that in the case of Turkey the factors leading to the introduction of new air pollution measures also induce the generation of higher levels of CO_2 emissions. As a result, we can reject the plausibility of the conjectures 1a and 3b. In this context, the case of EU integration is particularly interesting since it does not lead to a substantive reduction of air pollution levels. One might argue that in light of the rather insecure accession perspective of Turkey, the government only pays lip-service.

To be sure, the accession negotiations with Turkey were only opened in 2005. Hence, until that date we could argue that the membership perspective was rather insecure. Accordingly, it would be worthwhile to extend the ending of the observation period beyond 2005 to check whether the air pollution levels became reduced. Interesting is also the evidence that we find for the existence of regulatory competition at the level of environmental policy enforcement. In this context, it is indeed plausible to argue that enhanced regulatory burdens are neutralized through a lax enforcement practice. While it could in fact be the case that corruption plays a role in this context, it need not necessarily be the case, if the enforcement agencies 'supply' this practice voluntarily.

On the other side, we find some support for the plausibility of the conjectures 1b, 2a, 2b, and 3a. Hence, if regulatory competition is effective in emerging market democracies, it affects environmental policy rather through a lenient enforcement of environmental protection standards than the preservation of low regulatory levels. We believe that this is a crucial finding which qualifies the often optimistic scenarios for fostering sustainable development through economic integration. However, we must also emphasize that in this analysis we did not take into account other factors, e.g. the impact of non-governmental groups, which might have a positive impact on the governmental enforcement efforts, *ceteris paribus*. Instead, we showed that if we focus exclusively on the implications of economic integration, in the Turkish the most likely observation is a formal tightening of air pollution regulation, which however, are largely ineffective to reduce air pollution levels. We interpret the increasing pollution levels as a sign of persistently low governmental enforcement efforts.

4. Conclusions

The linkage between economic integration and environmental policy has indeed become an important topic in the last few years. This is reflected by the impressive size of the body of scholarly literature and ongoing public debates. In this paper, we scrutinized how increased economic integration affects the stringency of environmental policy setting and enforcement. To improve the state of theorizing, we introduced the concepts of regulatory competition, economic conditionality and international harmonization, to which several studies implicitly make reference to – sometimes by merely using a different terminology or slightly different definitions. In the way we use these concepts, regulatory competition refers to economic integration through enhanced trade and FDI inflows by asking whether

national governments compete over the optimal design of domestic regulations in order to attract foreign capital and to improve the competitive position of their economy. Economic conditionality is predominantly likely to affect the stringency of environmental protection standards in industrializing countries, whose main trading partners have demanding environmental protection standards, or which seek to enter a free trade agreement with industrialized countries. Concerning international harmonization, we exclusively focused on the environmental policy implications of the EU.

Our descriptive analyses highlighted that all of these dimensions are likely trigger an upward change of environmental policy arrangements. We illustrated this dynamic by using data on Turkish clean air policies. At the same time, however, the air pollution levels increased in Turkey despite a higher regulatory density. In view of this finding, it can be questioned whether in the case at hand economic integration has lead to an environmental policy change, which with is compatible with the notion of sustainable development [38, 39]. As a consequence, we argue that it would be worthwhile to contrast environmental policy outputs and outcomes in a more systematic manner. In this vein, we could see how consequential environmental policy change actually is in (formerly) low-regulation countries.

However, this does not mean that there are no other forces that might potentially stimulate more effective environmental policy enforcement. In light of the purposefully limited theoretical focus on this analysis, we can merely state that economic integration is not the explanatory factor that impedes increasing levels of air pollution. This result is most surprising in the case of the EU since it possesses relatively far-reaching monitoring power, which should ideally provide a strong incentive for better policy enforcement.

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