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Border Carbon Adjustments and Industrial Competitiveness in a European Green Deal

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Keywords Border carbon adjustment, carbon pricing, competitiveness, international trade

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Abstract

As part of the European Green Deal, the EU is considering the introduction of a Border Carbon Adjustment (BCA) to ensure that the price of imports into the EU more accurately reflects the environmental costs of their carbon content. BCAs could be an alternative to free allocation to trade-exposed sectors as a measure to address the risk of carbon leakage in the EU's Emissions Trading System. While a BCA for exports is not categorically excluded, it is less likely to be consistent with WTO rules and therefore less likely to be proposed than an import-only BCA. A key point is that replacing free allocation by an import-only BCA would weaken the competitiveness of EU producers in foreign markets. The reason is that free allocation also helps support the cost competitiveness of domestic products that are exported to markets outside the EU. Therefore, a move to import-only BCAs does not necessarily make redundant the continued use of free allocation to help safeguard overall industrial competitiveness. While combining an import BCA with free allocation can increase the risk of legal challenges, such risks may be reduced with an appropriate design. More broadly, policymakers need to navigate a complex trade-off between competitiveness support, a stronger carbon price signal, and extra fiscal revenue.

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1. Introduction and Policy Context

Designing a carbon pricing mechanism which drives industrial decarbonisation while also safeguarding international competitiveness presents a major dilemma for policymakers. While an increasing share of global industrial emissions is covered by carbon pricing, coverage is likely to remain uneven at least in the short term. As a result, a country's (or region's) carbon price can undermine the international competitiveness of its trade-exposed sectors. This gives rise to the risk of 'carbon leakage'—where production or investment is offshored to jurisdictions without a carbon price in order to avoid carbon costs. Carbon leakage can lead to a net increase in global emissions if facilities abroad are more emissions-intensive than domestic ones. As a result, the economic, environmental, and political consequences of leakage risk make it one of the most contentious issues when designing a carbon pricing instrument.

Currently, the EU and other jurisdictions provide emissions allowances for free to sectors deemed at risk of carbon leakage, but this strategy may become incompatible with 'net zero' objectives. Under an emissions trading system, free allocation of allowances (emissions permits) to emissions-intensive trade-exposed (EITE) sectors such as cement, chemicals and steel can mitigate the cost increases incurred by domestic producers due to carbon pricing. It can thereby offset the potential loss of competitiveness relative to less regulated international competitors and thus reduce the risk of carbon leakage. Yet this approach has also faced criticism for muting the carbon price signal and conflicting with the 'polluter pays' principle. Moreover, an increasing push for countries to target 'net zero' emissions limits their ability to indefinitely provide free allocation. Ultimately, industrial decarbonisation is central to meeting the objectives of the 2015 Paris Agreement, and continued free allocation at current levels looks to be incompatible with a net zero future.

Border Carbon Adjustments (BCA) could play a central role in resolving this dilemma because they maintain abatement incentives while also safeguarding industrial competitiveness. The apparent challenges around the future of free allocation have led to increased interest in instituting a BCA as an alternative policy to safeguard industrial competitiveness. In its most likely form, a BCA would impose a carbon 'top-up fee' on imports at the border. In principle, this would be levied according to the quantity of carbon emissions associated with the imported product and the shortfall in carbon pricing coverage of those emissions. This BCA on imports would thus reduce leakage risk by ensuring that domestic producers do not face an asymmetric carbon price in their home market. The introduction of such a BCA could facilitate the removal of free allocation and restore the full carbon price signal for domestic producers.

In the EU, there is increasing political momentum for a shift to BCAs as a mechanism to support industrial decarbonisation while also incentivising stronger climate action

among its trade partners. A significant shift in Europe occurred in July 2019 when then incoming European Commission President Ursula von der Leyen suggested that BCAs would be central to plans for a European Green Deal. BCAs could prove to be a key element of the EU strategy to drive greater emissions reductions domestically while incentivising action in laggard jurisdictions.[5] On 4th March 2020, the European Commission opened consultations for the BCA roadmap. The EU is considering several design options for a BCA, including a carbon tax on selected products (both on imports and domestic production), a new carbon customs duty or tax on imports, or the extension of the EU Emissions Trading System (EU ETS) to imports. These options have in common that they only apply to imports, not to exports by EU producers. While a BCA for exports is not categorically excluded, it is less likely to be legally consistent with WTO rules.[6]

This paper argues that a transition to BCAs does not resolve the competitiveness dilemma or make redundant the provision of free allocation, and sets out relevant economic and legal considerations. It will be critical for EU policymakers to fully understand the implications of a move from free allocation to BCAs—and to get the policy design right. A key economic point is that a BCA on imports raises the overall production cost of non-EU companies on their sales to the EU but has no impact on relative costs of EU and non-EU companies in external markets. This asymmetry in BCA design weakens its ability to address competitiveness concerns. By contrast, free allocation acts as a subsidy to the production of EU companies; this mitigates the cost increase they experience due to carbon pricing both for domestic sales in the EU market and for exports to non-EU countries. In short, free allocation can reach channels of competitiveness that BCAs cannot. Therefore, to maintain a balanced approach to safeguarding industrial competitiveness under a net zero mitigation trajectory, the introduction of an imports-only BCA does not necessarily make the provision of free allocation redundant. More broadly, policymakers need to navigate the trade-off that BCAs lead to a stronger carbon price signal for both domestic and external producers and raise additional government revenue, while free allocation offers more holistic competitiveness support.

Related literature. This paper relates to three main strands of literature: (1) on competitiveness and leakage impacts of carbon pricing, (2) on the economics of border carbon adjustments, and (3) on the international law of border carbon adjustments. First, this paper sits within the context of literature on the competitiveness impacts of carbon pricing and concerns about carbon leakage. Early work by Reinaud (2005) focused on understanding the magnitude of production cost increases incurred by EITE sectors in the EU ETS, in light of the extent of (grandfathered) free allocation. All else equal, a greater increase in production costs

[5] France had previously already proposed to introduce a BCA as part of a "fair ecological transition". Outside Europe, BCAs have precedent at a sub-national level in California's carbon trading system.
[6] For further details, see below, Section 4.

leads to a greater concern about potential for production and employment losses and for carbon leakage—whereby emissions are offshored to outside the EU. Demailly & Quirion (2006) find that output-based allocation (OBA), that is linked to a firm's current production levels, significantly enhances the ability of free allocation to mitigate carbon leakage. Over the last 15 years, numerous studies have sought to estimate (short-term) competitiveness and leakage impacts for individual sectors, notably cement and steel; Martin, Muûls & Wagner (2016) and Dechezleprêtre & Sato (2017) provide useful reviews of this empirical literature.[7] Our contribution is a conceptual analysis that reflects recent EU policy developments, through the lens of a simple ABC framework that captures both short- and long-run competitiveness and different types of free allocation.

Second, the design of border carbon adjustments (BCAs) and their rationale have been explored in a strand of the wider literature on carbon competitiveness. In a cross-model analysis, Böhringer, Balistreri & Rutherford (2012) find that a BCA on imports can significantly reduce carbon leakage to external jurisdictions. Fischer & Fox (2012) provide a detailed model-based economic comparison of different approaches to BCA implementation and find that a combined import- and export-BCA is usually most effective at combatting carbon leakage. Hecht & Peters (2019) consider the impacts of BCA in an equilibrium model that, similar to us, uses the equalization of carbon costs between domestic and external firms as the metric by which BCAs can achieve "competition neutrality". Cosbey, Droege, Fischer & Munnings (2019) provide a useful synthesis of the main findings from the BCA literature to date. More broadly, Helm, Hepburn & Ruta (2012) argue that the adoption of an import-BCA by one region can provide dynamic incentives for stronger carbon pricing in other regions (so as to capture the additional tax revenue). Our contribution in this paper is a stylized comparison of different BCA implementations, with an emphasis on limits to competitiveness protection given by import-only BCAs.

Third, legal implications of BCAs, and notably their compatibility with international trade law, have been extensively studies in the literature, but with inconclusive results for BCAs on exports. Following earlier studies on the legality of border tax adjustments (BTAs) for environmental and energy taxes, Ismer & Neuhoff (2004) offer one of the earliest analyses of border adjustments and their legality as a tool of climate policy, concluding that a BCA for imports and exports would be admissible under World Trade Organization (WTO) rules provided it is calculated on the basis of a best available technology standard (Ismer & Neuhoff, 2004). De Cendra (2006) analyses the legality of border adjustments for exports, and concludes that the relevant WTO rules lack clear guidance on the question. A joint report by the WTO

[7] Neuhoff & Ritz (2019) synthesize the theory and evidence on the pass-through of carbon costs to product prices by industrial sectors in light of their market structure, international trade exposure, and the design of free allocation.

and United Nations Environment Programme (UNEP) affirms that WTO rules permit the use of BTAs on exported products under certain conditions, but does not conclusively state whether allowances under an emissions trading system can be considered akin to an adjustable tax. Likewise, Hillman (2013)—a former member of the WTO Appellate Body—echoes the view that export BTAs can be legal, but does not extend her analysis to free allocation under an ETS. Holzer (2014) argues that exports would only be eligible for adjustment at the border if the costs accruing under an emissions trading system could be considered an indirect tax, something she considers unlikely. Mehling, van Asselt, Droege, Das & Verkuijl (2019) take a more favourable view on the classification of emissions trading as an indirect tax, but caution against overcompensation vis-à-vis domestically sold products.

Overview of the paper. Section 2 introduces a simple 'ABC framework' through which to understand the drivers of industrial competitiveness under carbon pricing. It explains how free allocation and BCAs support these three channels in different ways. Section 3 provides an indicative economic analysis of the extent to which BCAs and free allocation are substitutes in terms of their competitiveness impacts. Section 4 discusses legal considerations relevant for, respectively, the implementation of an EU BCA on exports and the combination of an EU BCA on imports with continued free allocation for exports. Section 5 concludes the analysis and suggests next steps for policymakers and industrial stakeholders.

2. ABC Competitiveness Framework

A simple framework helps to understand the three key channels of competitiveness impacts on EITE sectors under carbon pricing. In the short run, the competitiveness of domestic companies operating in EITE sectors can vary along two channels. Channel A reflects the competitiveness of their production in domestic markets relative to imports from rivals based in external jurisdictions. Channel B is their competitiveness in external markets to which they export. These short-run channels of competitiveness will importantly be driven by the short-run marginal cost of production of domestic producers relative to that of their rivals across both markets—which depend, in part, on the design of carbon prices. In addition, over the longer run, Channel C captures the competitiveness of existing productive capacity or new investment that may serve both domestic and external markets. This long-term channel will, in general, also depend on the long-run marginal cost, which includes the cost of capital. All three channels matter for a holistic assessment of how different carbon pricing policy options can safeguard EITE competitiveness—and, closely related, mitigate the risk of carbon leakage. The immediate priority for policy is to focus on addressing Channels A and B, as this is what drives short-run behaviour and is likely to be a pre-condition for avoiding competitive distortions from Channel C over the longer run. Figure 1 illustrates the ABC competitiveness framework.

Free allocation can safeguard industrial competitiveness through all three channels, but the method of free allocation has important implications for which channels are reached. The free allocation of emissions allowances can assume several forms, with different implications for the competitiveness of domestic companies:

1. *Grandfathering*: Grandfathered allowances that are based solely on historical emissions are equivalent to a lump-sum transfer that has no impact on the marginal cost of production. Such 'pure' grandfathering therefore does not address Channel A or B but can affect Channel C by forestalling closure of productive capacity.
2. *Output-based allocation*: At the opposite end, output-based allocation (OBA) explicitly links the extent of free allocation to current production levels—which, in principle, can address all three of the ABC channels of competitiveness impacts.
3. *Hybrid allocation*: Current EU policy is a hybrid form of free allocation that combines elements of grandfathering and OBA with an emissions performance standard that caps allocations according to the best-performing companies in an EITE sector. Its fixed baseline period limits the degree to which allocations adjust with production levels.

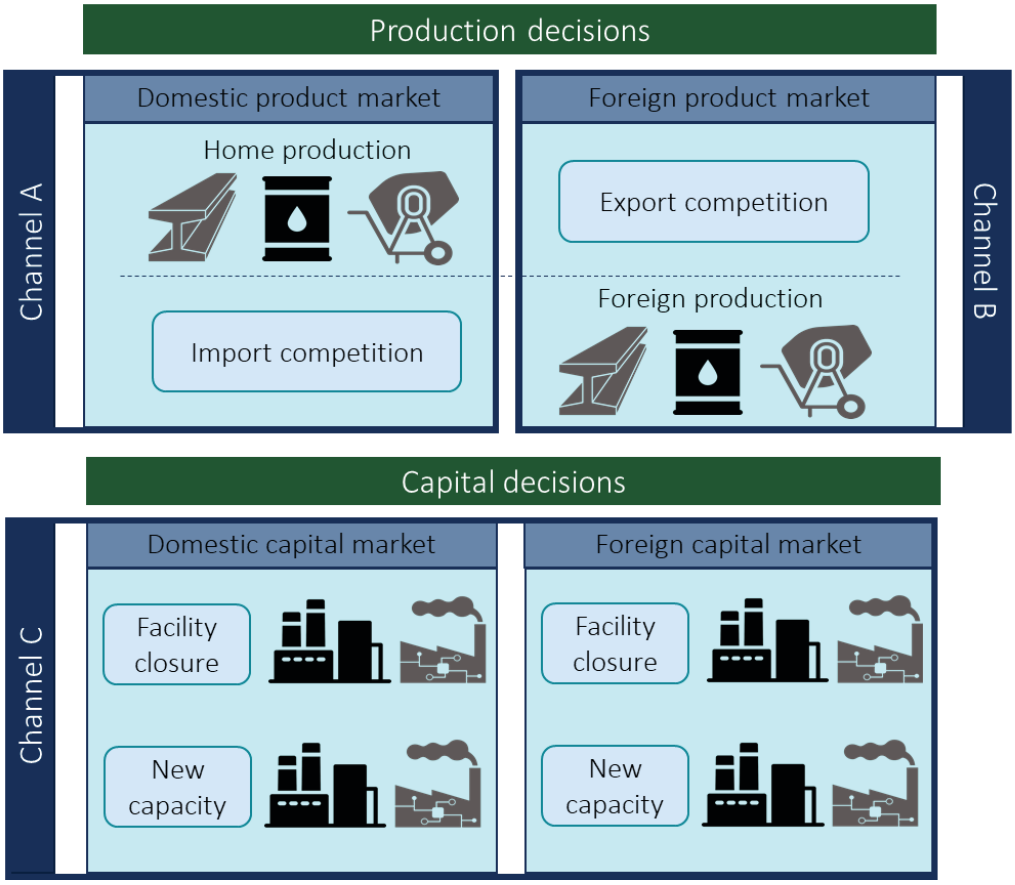

Figure 1: ABC framework of short- and long-run competitiveness channels

The central point is that common forms of free allocation, in practice, mitigate some combination of the short-run Channels A and B and long-run Channel C. While this helps domestic companies compete in both domestic and external markets, the correspondingly muted short-run carbon price blunts the incentive for industrial abatement.

A BCA that is levied only on imports to avoid potential legal concerns therefore supports EITE competitiveness primarily along the short-run Channel A of the ABC framework. A BCA in the form of a border tax on imports serves as a top-up carbon fee on products sold to the domestic market by companies from external jurisdictions (with zero or at least lower carbon prices). In this way, the BCA on imports raises the marginal cost of export for these external companies; this, in turn, supports the competitiveness of domestic producers along Channel A of the framework. However, the BCA on imports has no effect on Channel B because it leaves unchanged the relative costs of domestic and external companies for sales to external jurisdictions. (This would be different under a BCA design that combines a tax on imports with a subsidy to exports.) Given this remaining asymmetry in short-term competitiveness along Channel B, it is unlikely that such a BCA on imports only will have a sufficiently strong effect on the longer-term competitiveness channel C. However, this BCA does maintain the strength of the domestic carbon price signal and therefore does not blunt abatement incentives in the way that common forms of free allocation do.

3. Economic Analysis of Border Carbon Adjustments vs. Free Allocation

We now use a simplified economic analysis to explain more formally the differences between free allocation and BCAs levied on imports in terms of the competitiveness support they provide. Our analysis aims to inform policy discussion by clarifying the different roles that different policy instruments can play to address EITE competitiveness. For simplicity and concreteness, we assume that the world is split into two regions: the European Union (EU) and the rest of the world (ROW). Carbon prices in these two regions are written as t_i and t_j, respectively, where the EU has a higher carbon price than that in effect in the ROW, with $t_i > t_j$. The ROW carbon price can be interpreted as an average across a larger number of non-EU countries. Our analysis takes the two regions' carbon prices t_i and t_j as given and fixed, rather than these also being policy instruments. In the case of the EU ETS, for example, this simplifying assumption can be justified by the carbon price being significantly driven by electricity generation, which is generally not exposed to international competitiveness concerns in the way that the industrial sectors are.

Free allocation dilutes the carbon price faced at the margin by domestic producers while a BCA tops up the carbon price faced by imports. The impact of free allocation

on the carbon price is captured by the parameters f_i and f_j, both on [0,1], where a value of zero means no dilution and a value of one represents full dilution. Output-based allocation, by acting as an effective subsidy to production, dilutes the carbon price faced by industrial emitters at the margin. Current hybrid EU allowance policy corresponds to $0<f_i<1$—with elements of grandfathering, output-based allocation, and an emissions performance standard. The 'effective' carbon prices in the EU and ROW are therefore given by $(1-f_i)t_i$ and $(1-f_j)t_j$. A BCA tops up the carbon price faced by imports; its analytics are detailed below.

As a simple proxy for competitiveness concerns, we consider the EU's policy objective to be a level playing field in effective carbon prices using free allocation and/or a BCA on imports.[8] The equalization of effective carbon prices across the EU and the ROW serves as a simple proxy in our analysis for concerns about industrial competitiveness. This equalization of carbon prices also leads to an equalization of marginal abatement costs across jurisdiction, which is the basic cost-efficiency property of carbon pricing. (We argue further below that similar conclusions would obtain under alternative metrics for competitiveness.) The two policy instruments available to the EU are the extent of free allocation as well as the introduction of a BCA on imports. We assume a preference for using as little free allocation as possible to achieve the policy objective. In view of a likely BCA proposal by the EU, our main question is on the policy implications of a move from free allocation to an import-only BCA as a means to address competitiveness. The impacts of policy options on competitiveness are considered in terms of the ABC framework presented above.

Case 1: A local perspective on competitiveness

First consider a local perspective on competition focused on domestic production by EU-based producers competing with imports from ROW companies. In the absence of a BCA, effective carbon prices for EU and ROW producers are $(1-f_i)t_i$ and $(1-f_j)t_j$. These effective carbon prices are equalized if the degree of free allocation to EU-based producers is equal to $f_i = [1-(1-f_j)(t_j/t_i)] \equiv f_i^*$. This serves as our benchmark against which to compare the effects of the introduction of a BCA. Observe that this 'optimal' degree of free allocation is always positive, $f_i^*>0$, as a direct consequence of the EU having a higher carbon price than the ROW. A lower degree of free allocation is needed if either the ROW has a higher carbon price or itself provides less free allocation.

In the case of a local perspective, both free allocation and a BCA on imports can level the playing field in terms of effective carbon prices. Now suppose that the EU

[8] This aligns with the likely focus of the EU's proposed BCA: "Carbon leakage occurs when production is transferred from the EU to other countries with lower ambition for emission reduction, or when EU products are replaced by more carbon-intensive imports... a carbon border adjustment mechanism would ensure that the price of imports reflect more accurately their carbon content." See EU Inception Impact Analysis, 2020, available at https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12228-Carbon-Border-Adjustment-Mechanism

additionally introduces a BCA on imports. With the BCA, the effective carbon price that ROW producers face when selling into the EU becomes $(1-f_j)t_j+b_i[(1-f_i)t_i-(1-f_j)t_j]$, where the parameter b_i, also on [0,1], measures the extent of the top up implied by the BCA. In effect, the BCA on imports is a top-up to the effective carbon price of non-EU producers—while it has no effect on the effective carbon price paid by EU companies themselves. By design, therefore, a 'full' BCA, with $b_i=1$, by construction equalizes effective carbon prices—regardless of the degree of free allocation. Similarly, equalization again occurs always where free allocation is at the level $f_i = f_i^*$—regardless of the existence or extent of the BCA.

This local perspective suggests that the EU has two distinct main policy options to maintain industrial competitiveness. Either it can continue the use of free allocation at the level $f_i = f_i^*$ and not rely on a BCA at all. Or it can switch the policy design to a full BCA on imports, with $b_i=1$, and discontinue free allocation, as it is then no longer needed. In other words, this local perspective on competitiveness suggests a strong element of policy substitution: optimal use of one policy instrument makes redundant the use of the other. This reasoning is in line with recent EU policy discussions that envision a BCA replacing free allocation. Indeed, the particular attraction of the imports-BCA here is that, unlike free allocation, it maintains the carbon price signal for abatement—and also raises additional government revenue for EU countries.

The limitation of this local perspective, however, is that it does not take into account competition in non-EU export markets. There are at least two problems with this local perspective on competitiveness. First, while it 'solves' Channel A of the ABC competitiveness framework, it ignores Channel B: EU companies will still face asymmetric carbon prices in their export markets. Second, all else equal, it leaves open the possibility that long-run returns on investment will nonetheless be lower in the EU. With EU firms still facing an uneven playing field in ROW markets, this may impact decisions regarding current productive capacity or investment in new capacity—leading to Channel C-type leakage of productive capacity. If such competitiveness impacts are pronounced, this could lead to early closure of industrial plants, forestall upgrades to improve productivity or carbon efficiency, and see investment in new capacity in ROW that may otherwise have occurred in the EU.

Case 2: A global perspective on competitiveness

Now consider a fuller picture that captures global competitiveness, also in ROW markets. In addition to the previous single-market perspective, this now also includes the position of EU producers exporting to ROW markets. As a benchmark, with free allocation yet without a BCA, effective carbon prices are $(1-f_i)t_i$ for EU producers in both EU and ROW markets, and $(1-f_j)t_j$ for ROW producers also in both markets. So effective carbon prices are again equalized if the EU's free allocation is

equal to $f_i = [1-(1-f_j)(t_j/t_i)] \equiv f_i^*$. Crucially, this degree of free allocation restores the level playing field across both EU and ROW markets. In this sense, the previous finding on free allocation is robust to a multi-market perspective.

The global perspective reveals that free allocation can reach channels of competitiveness that a BCA cannot. The introduction of a BCA on imports by the EU again has no effect on the effective carbon price of EU producers, which remains $(1-f_i)t_i$ in both their domestic and export markets. For ROW producers, the key observation is that their effective carbon price in their domestic markets also remains unaffected at $(1-f_j)t_j$ by the BCA on imports. Like before, their effective carbon price on exports to the EU becomes $(1-f_j)t_j+b_i[(1-f_i)t_i-(1-f_j)t_j]$. This leads immediately to the conclusion that now a full BCA ($b_i=1$) is unable to equalize effective carbon prices globally as it cannot 'reach' competition in ROW markets. Effective carbon prices are equalized for both producer types in both markets as long as $(1-f_i)t_i=(1-f_j)t_j+b_i[(1-f_i)t_i-(1-f_j)t_j]=(1-f_j)t_j$. It is easy to verify that this condition is, once again, satisfied by a free allocation $f_i = [1-(1-f_j)(t_j/t_i)] \equiv f_i^*$, regardless of the degree of BCA. As a result, moving to a BCA here comes with zero policy substitution: the same level of free allocation remains optimal for 'global' competitiveness. This shows that a BCA on imports (only) is necessarily insufficient to fully address all competitiveness channels underlying the ABC framework.

A simple metric that captures the potential limitations of import-only BCAs as a competitiveness instrument is the export reliance of domestic producers. In the EU, a large proportion of products on the carbon-leakage list corresponds to major exporting industrial sectors. As an illustration, Figure 2 shows potential export exposure of the steel industry. This sector accounts for nearly €128 billion in gross value added (GVA) and supports nearly 2.5 million European workers directly and indirectly[9]. Around 15% of EU finished steel products are exported to ROW destinations. The top two EU export destinations for the sector are the US and Turkey. Each of these countries has a large steel production base and a relatively low likelihood of placing a price on industrial carbon emissions in the short term—given that neither has ratified the Paris Agreement. Failure to account for the export dynamics of such sectors when designing a BCA could present a risk of carbon leakage.

Other competitiveness metrics such as market share or profitability are likely to yield a similar conclusion: a BCA on imports alone does not make free allocation redundant. The above analysis shows that free allocations and BCAs have limited substitutability using one of the simplest metrics of competitiveness: equalization of effective carbon prices. There are several other natural metrics of competitiveness such as EU companies' market share, profitability, and production volumes. Quantifying the rate of policy substitution between free allocation and BCAs in these

[9] http://www.eurofer.org/News%26Events/PublicationsLinksList/201806-SteelFigures.pdf.

cases would require a model of the competitive dynamics at the sectoral level. However, we think that the basic conclusion would continue to apply in a less stark form: moving to an import-only BCA may well allow the level of free allocation to be reduced—but not all the way to zero. Absent some other form of export-BCA, both policy levers will be needed to fully address competitiveness concerns under the ABC competitiveness framework.

Figure 2: Illustration of EU steel exposure to export market

Source: Based on data from Eurofer (2018), European Steel in Figures; each flag represents 1% of the top 10 destinations, the EU steel industry

Our formal analysis so far has deliberately focused very narrowly on competitiveness concerns; other economic and political factors may favour a BCA over free allocation. One important distinction between free allocation and a BCA concerns government revenue. Free allocation forgoes fiscal revenue from allowance auctions while a BCA raises additional fiscal revenue at the border. This is one aspect that, all else equal, favours a BCA over free allowances—especially if the latter relies on generous levels of allocation. Another important consideration is that a BCA transfers some of the EU's abatement incentive to non-EU producers—and therefore may drive additional global emissions reductions. BCAs may also have a role in driving increased uptake of carbon pricing in ROW jurisdictions. Where the EU is an important destination market for ROW products, the EU's BCA may create an incentive for the adoption of carbon pricing in the ROW—partly as a device to capture carbon revenues. Such an adoption dynamic for BCAs could, over time, reduce the need for free allocation and help create an international level playing field in carbon.

More broadly, therefore, our analysis suggests that policymakers need to navigate a complex trade-off between free allocation and BCAs, and this may be different depending on each sector's economic characteristics. While free allocation can offer more holistic competitiveness support, BCAs can lead to a stronger carbon price signal for both domestic and external producers and raise additional government revenue. At the same time, the introduction of BCAs raises considerable administrative and legal challenges, while free allocation is already in place and enjoys relatively broad acceptance among ETS stakeholders. These trade-offs can resolve differently across EITE sectors depending on the extent of their export reliance and on the value of a stronger abatement incentive. Our analysis highlights the need for careful consideration of internal and external market dynamics, and potential policy interactions for the EU to develop a coherent policy mix.

4. Legal Analysis of Border Carbon Adjustments vs. Free Allocation

While a BCA can in principle also cover exports, doing so makes it more likely to incur legal challenges than an import-only BCA. While the EU's plans to date suggest it is considering an import-only BCA, a BCA design can, in principle, also apply to exports; that is, it can adjust for climate-policy asymmetries at the border when domestic products leave the EU to be sold in external markets. Such adjustment could occur in the form of an exemption, regulatory relief, or compensation payment. For example, products destined for export markets may be exempt from the need to pay the carbon price on emissions associated with their production. In doing so, however, an export BCA incurs a two-fold risk of violating international trade law:

1. Relief or exemption for exports would reduce the reach of the EU's carbon price—which currently does cover emissions associated with production of exported goods. Because it reduces the degree to which carbon costs are internalized across the EU, such an export BCA is thus less likely to be considered a measure necessary to protect the environment or related to the conservation of exhaustible resources. That, in turn, would mean that an export BCA may not benefit from the exemption of Article XX of the General Agreement on Tariffs and Trade (GATT). Because the export-BCA would not apply to goods from trade partners, however, it is unlikely to be considered discriminatory under GATT, and will instead raise concerns under WTO subsidy rules, as described in the next point.
2. Any form of support specifically to products destined for export also increases the risk of a violation of multilateral disciplines under the Agreement on Subsidies and Countervailing Measures (SCM Agreement). Under that treaty, a subsidy is defined as a financial contribution by a government that confers a benefit. This broad definition includes foregone government revenue that would otherwise be due, as is the case when a government allocates allowances for free where auctioning has otherwise become the default, when

it compensates relevant costs, or when it altogether exempts exporters from compliance. Such relief will further be considered a *prohibited* subsidy if its award is made contingent on export performance, that is, if there is a relationship of conditionality or dependence between the award and exportation. Because an export BCA would be conditional on exportation, it could be, *prima facie*, classified as a prohibited subsidy.

Combining free allocation with an import-only BCA may face legal challenges under multilateral free trade disciplines but such legal risks can be lowered if certain conditions are met. While continuing the practice of free allocation for exports only raises the legal risks identified in the previous paragraph, there are ways to combine an import BCA with free allocation – as suggested by our ABC competitiveness analysis – so as to limit these risks.

First, an environmental argument can be made for retaining free allocation: ensuring the competitiveness of EU producers in international markets will help safeguard their market share against foreign products that may have a higher carbon intensity. The strength of this argument will vary across industries depending on the extent of competition and on the carbon intensity of EU producers relative to the average non-EU competitor (as, in practice, an import BCA is likely to be based on default values for carbon intensity that are applied uniformly to non-EU imports). What is more, free allocation would not simply exempt exported products from the EU's carbon price, but – akin to the current system of free allocation – would continue to provide a dynamic incentive for carbon-intensity reductions through the use of benchmarks.

Second, the Agreement on Subsidies and Countervailing Measures also specifies that exemption or remission of indirect taxes for exports is admissible if it does not exceed those levied on like products sold for domestic consumption. Two conditions have to thus be met in order for this provision to sanction free allocation for exports: the application of the EU ETS to producers of goods destined for domestic consumption has to qualify as an indirect tax; and the value of freely allocated allowances must not exceed the carbon cost borne by domestically consumed goods.

While there is support for considering an emissions trading system an indirect tax, the literature on this question is divided. Pending relevant case law, this first condition will remain subject to legal uncertainty. For the second condition, the regulator will have to ensure that the allowances allocated for free to exporters does not exceed the amount they would otherwise have to purchase at auction if their goods were sold into the domestic market. As long as free allocation for emissions associated with exported products continues to be based on the current benchmarking system and is combined with full auctioning for emissions associated with products sold into the domestic market, this condition is likely to be met.

5. Conclusion

Our economic analysis suggests that an import-only BCA does not necessarily make redundant the use of free allocation of allowances in providing competitiveness support to EITE sectors. An import-only BCA comes with an inherent asymmetry: it levels the competitive playing field in EU markets but cannot address competition in external markets. By contrast, free allocation can support cost competitiveness of EU producers across both EU and external markets. Therefore, a move to import-only BCAs does not necessarily make redundant the continued use of free allocation to help safeguard overall industrial competitiveness. Our analysis made this point using the equalization of effective carbon prices as a simple proxy for competitiveness concerns; we believe that a similar point also applies to richer metrics of competitiveness such as market share and profitability.

Our legal analysis suggests that combining free allocation with an import-only BCA may face challenges, but also that such legal risks can be reduced if certain conditions are met. While a BCA for exports has not been categorically ruled out by the EU, it is less likely to be consistent with WTO rules and therefore less likely to be proposed than an import-only BCA. Combining free allocation for exported products with a BCA on imports can increase the risk of legal challenges under multilateral free trade disciplines. Still, if the design ensures that exporters retain an incentive to lower their carbon intensity and do not benefit from free allocation in excess of the carbon pricing burden faced for domestically sold products, this risk can be limited.

Driving industrial decarbonisation while maintaining international competitiveness remains a major challenge for policymakers shaping the European Green Deal. A complete picture of industrial competitiveness includes a short-term level playing field and avoiding longer-term competitive distortions to capacity utilisation and new investment. BCAs may prove an important new tool to address the risk of carbon leakage. Over the longer term, decarbonisation will be driven by innovation policy. While a rising carbon price enhances abatement incentives, it is insufficient to overcome non-price barriers to innovation and technology adoption. The capital-intensive and integrated nature of industrial production processes means that policymakers will need to continue to support research, development and deployment of prospective low-carbon technologies.

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