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## Terminating links between emission trading programs

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### ABSTRACT

Links between emission trading programs are not immutable, as highlighted by New Jersey's exit from the Regional Greenhouse Gas Initiative in 2011. This raises the question of what to do with existing permits that are banked for future use—choices that have consequences for market behavior in advance of, or upon speculation about, delinking. We consider two delinking policies. One differentiates banked permits by origin, the other treats banked permits the same. We describe the price behavior and relative cost-effectiveness of each policy. Treating permits differently generally leads to higher costs, and may lead to price divergence, even with only speculation about delinking.

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### Introduction

Despite significant effort and multiple rounds of negotiations, there is no coordinated global program to regulate carbon emissions. Rather than waiting for these efforts to bear fruit, various trans-national, national, and sub-national entities have developed independent, regional carbon-trading programs. Conceptually, each of these program features its own denomination of carbon permits and a registry in which permits are established, tracked, and ultimately canceled when surrendered for compliance purposes. Within this framework, some of these trading programs have decided to link together, meaning one program accepts another program's permits for compliance in its system and (typically) vice versa. For example, Quebec and California have chosen to link their programs, and the Regional Greenhouse Gas Initiative (RGGI) in the northeastern United States is effectively a system of linked state programs.

At the same time programs are choosing to link, we also have examples of delinking, in which the links between programs are severed. In May 2011, New Jersey announced it would delink from RGGI and terminate its program. More recently, in July 2014, Australia terminated its carbon pricing program even before an intended link with the EU Emissions Trading Scheme (ETS) had begun.

Termination of a compliance link, whether real or merely speculated by market participants, can have important consequences for the performance of the trading programs. In particular, when permits are being saved, or “banked,” to meet future compliance obligations, current prices are strongly influenced by expected future prices, which in turn depend

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on beliefs about whether or not the programs will remain linked in the future. This possibility that mere speculation about delinking might influence market outcomes suggests that, at a minimum, when programs are initially linked, consideration should be given to the possibility of delinking in the future. In particular, do key choices about delinking and the handling of banked permits improve market outcomes when there is a real or speculative delink? Understanding the answer to such questions can then inform a decision about whether and how provisions for delinking might be included at the outset. To date, this issue has tended to be ignored if not outright avoided.<sup>1</sup>

To analyze this issue, we consider a two-period model with two regions. Firms in both regions face a regulation that requires them to surrender a tradable permit for each unit of pollution they emit. In the first period, the trading programs are linked; that is, firms in both regions can use permits issued by either region for compliance. First-period permits may also be banked for use in the second period. Turning to the second period, we first consider the fully linked baseline case in which the markets remained linked so firms can continue to use permits issued by either region. We then consider the issue of delinking, starting with certain termination of a link and then turning to the question of uncertainty and speculation. When markets are delinked in the second period, firms can only comply using second-period permits issued by their home region and—depending on the delinking rules—banked first-period permits from one or both regions. To complete the description of the delinked case, we must specify those rules. We consider two main policy options. In the asymmetric policy, saved permits are only valid to cover emissions in the region for which they were originally issued. In the symmetric policy, all saved permits are split such that a fraction  $\pi$  are valid to cover emissions in one region and  $(1 - \pi)$  are valid to cover emissions in the other region. A simple variant of the symmetric policy is one in which the market, rather than the regulator, chooses  $\pi$ . For either policy option, a firm in one region holding a permit, or fraction of a permit, that is valid only in the other region may sell those permits in the other region's market. We assume that these policies are announced when the link is formed, and in particular before the first-period trading begins.

Our main results show that different delinking policies can lead to significantly different market outcomes. Under asymmetric delinking, aggregate abatement costs can increase compared to the fully linked case and first-period prices of permits issued by each region can diverge. In contrast, under symmetric delinking, first-period prices never diverge and the number of cases in which abatement costs increase, and the magnitude of these increases, is smaller. Similar results hold when there is uncertainty or speculation about delinking, where speculation may involve an incorrect expectation about the likelihood of delinking. Here, we confirm that such speculation can affect cost-effectiveness and create price divergence. In addition, we show that symmetric delinking does a better job of reducing these consequences.

Some care must be taken with the interpretation of these results. In particular, we view them not as precise guidance for linked jurisdictions now contemplating a delink, but rather as advice to policymakers to consider delinking rules *when a link is being created*. In particular, speculation about delinking can have effects on market outcomes even if delinking never actually occurs, and the assumed form of delinking matters. By definition, our results provide insights about the market consequences of actual delinking, but it is less clear how to interpret our normative measure of cost-effectiveness in a real delinking scenario. The decision to terminate a link will likely be based on a variety of considerations beyond cost-effectiveness, such as differences in ambition and/or desired carbon prices, which are outside the scope of our model. We do, however, consider different ways to treat banked permits when a link is terminated and other practical questions.

To put these ideas firmly into context, the next section briefly reviews the policy history and literature on linking and delinking. We then present our model and these main results in the section “A model of linking and delinking”, including a numeric example. The section “Extension and discussion” presents additional considerations, including a flexible delinking policy, how the decision might be managed in real time, and the possibility that discussions about delinking may influence market expectations about its occurrence. The section “Conclusions” observes that speculation about policy changes more generally may have somewhat unique consequences for tradable permits versus other regulatory instruments. This may require more attention to potential adverse impacts and possibly influence our views about their relative performance.

## History and literature on linking

During much of the 1990s, policy debate focused largely on how to design a single global market for trading carbon permits as “the” vehicle to address global climate change. A single global market would be an economically desirable outcome because one ton of a greenhouse gas emitted anywhere in the world has the same climate change consequences for everyone. Such a market would universally equalize the marginal cost of reducing emissions. A single market is also more resilient to regional disruptions, spreading any imbalance over a larger volume of supply and demand. The Kyoto Protocol was widely viewed as a first step in this direction.

However, a single global market has turned out to be a practical impossibility, at least for the time being. Participation in the Kyoto Protocol has declined to a largely symbolic gesture among countries with well-aligned domestic policies. Instead, we see a multiplicity of distinct regional, national, and even sub-national trading programs emerging. Most notably this includes the EU-ETS established in 2005, along with state-level programs established as part of RGGI in the United States,

<sup>1</sup> During an August 2012 press conference discussing the possibility of linking with the EU, Australian Minister Greg Combet repeatedly ducked questions about delinking or a “get-out” provision. See [Combet \(2012\)](#). The EU-ETS does not contain any provisions for the delinking of EU member or non-member states (which, to date, only include countries in the broader European Economic Area and Switzerland). Both RGGI and the California-Quebec agreement specify a procedure for withdrawal, but do not specify what happens to banked permits.

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