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**Article**

## Comment on "MRIO linkages and Switzerland's CO2 profile" by Octavio Fernandez-Amador, Joseph Francois, and Patrick Tomberger

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**Comment on "MRIO linkages and Switzerland's CO<sub>2</sub> profile" by Octavio Fernández-Amador, Joseph Francois, and Patrick Tomberger**

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The paper by OCTAVIO FERNÁNDEZ-AMADOR, JOSEPH FRANCOIS and PATRICK TOMBERGER in this issue of *Aussenwirtschaft* provides a new and interesting manner of measuring CO<sub>2</sub> emissions. Instead of focusing on how much emissions are produced within a country, it suggests measuring the total amount of emissions embodied in the production or consumption of each country.

This is important for at least two reasons. First, in a globalized world where production is mainly undertaken within global supply chains, the focus on what is locally produced is misleading. The production of a final good in Switzerland may be generating very little emissions in Switzerland. However, the intermediate goods produced abroad that are used in the production of the Swiss final good may generate a lot of CO<sub>2</sub> emissions elsewhere. Because CO<sub>2</sub> is a global pollutant, it matters little whether it is produced in Switzerland or elsewhere; the environmental consequences in Switzerland will be roughly the same.

Thus, having a global measure of how much CO<sub>2</sub> emissions are embodied in Swiss production is important. FERNÁNDEZ-AMADOR ET AL. suggest that there are striking differences in both levels and changes between these two measures. The emissions undertaken by Swiss producers in Switzerland declined from 47 million metric tons in 1997 to 44 metric tons in 2011, which is roughly consistent with its Kyoto Protocol objectives of an 8% reduction with respect to the 1990 emission levels. However, during this period the overall global emissions embodied in Swiss production increased from 92 million metric tons in 1997 to 130 million metric tons in 2011. That's a 34% increase in CO<sub>2</sub> emissions in Switzerland! The Kyoto Protocol should probably have been measuring CO<sub>2</sub> emissions differently.

This brings me to the second reason why this new concept is important. It has strong implications for the way the regulator tries to curb CO<sub>2</sub> emissions. In countries where voters are concerned about CO<sub>2</sub> emissions, the legislator has generally regulated the local emission of CO<sub>2</sub> by imposing limits on emissions by local producers. As local producers reduce their emissions, the voter/consumer has the impression that its consumption is becoming "cleaner". As the authors show, this has not been the case. The emissions embodied in Swiss consumption

increased from 91 million metric tons in 1997 to 97 million metric tons in 2011. This is explained by the fact that a large share of what is consumed in Switzerland is produced elsewhere in countries with more lax legislation in terms of CO<sub>2</sub> emissions.

The policy implications are clear. If Swiss voters are concerned about the consequences of CO<sub>2</sub> emissions and would like to reduce their CO<sub>2</sub> footprint, it will not be enough to limit CO<sub>2</sub> emissions for Swiss firms producing in Switzerland. This will simply lead to the outsourcing of CO<sub>2</sub> emissions to countries with laxer environmental laws, as illustrated by the large CO<sub>2</sub> trade deficit that Switzerland has with China. Indeed, imports from China embodied much more CO<sub>2</sub> emissions than exports to China.

For carbon taxes or regulations on emissions in Switzerland to work, they need to be accompanied by border taxes. Otherwise, as shown by FERNÁNDEZ-AMADOR ET AL., they will have no impact. Without border taxes, pollution will simply be outsourced elsewhere as carbon taxes or regulations to curb emissions are introduced. In other words, border taxes would prevent the creation of a comparative advantage in the rest of the world in the production of CO<sub>2</sub>-intensive goods and limit the reshuffling of production towards countries with laxer legislation or lower carbon taxes.

As illustrated by the case of Switzerland, this offshoring of CO<sub>2</sub> emissions to countries with more lax legislation can lead to higher overall levels of global CO<sub>2</sub> emissions as legislation is tightened in Switzerland. In other words, the introduction of more stringent legislation in Switzerland results in more global pollution, not less!

The opposition to the introduction of border taxes to compensate for differences in CO<sub>2</sub> taxation or regulation across countries generally relies on two types of argument. The first argument is a legal one. Some suggest that border taxes – if they were to be introduced – would be challenged as an illegal trade policy instrument by members of the World Trade Organization (WTO). The idea is that border taxes are discriminatory as they will vary by trading partner depending on the differences in regulation of CO<sub>2</sub> emissions. The second argument against the use of border taxes relies on the fact that too much information is needed to calculate the border tax, and that the acquisition of this information is very costly.

Fortunately, I am not a trade lawyer, but I would dismiss the first argument by noting that there is nothing discriminatory in a tax that compensates for differences in legislation across countries. It is precisely these differences in legislation that are discriminatory and introduce distortions. To compensate for those distortions,

one must introduce different levels of taxation depending on the difference in legislation. This is the same kind of argument that allows WTO members to impose different antidumping duties on different firms depending on the dumping margin. In any case, regardless of the philosophical question on whether a border tax is discriminatory or not, Article XX(b) of GATT should provide enough flexibility for WTO members to introduce border taxes. Unfortunately, this has not yet been tested in the WTO's dispute settlement body.

We can now also dismiss the costly information argument against border taxes thanks to the paper by FERNÁNDEZ-AMADOR ET AL.. The paper contains all the necessary information to calculate the border tax that would correct for differences in CO<sub>2</sub> taxation across countries. Ideally, more detailed information at the firm level, and not the industry level, would be necessary, and one would need to provide certification schemes to firms that satisfy the Swiss regulations on CO<sub>2</sub> emissions. But this is feasible, as the experience with rules of origin in preferential trade agreements illustrates.

To sum up, I would argue that in their paper in this issue, FERNÁNDEZ-AMADOR ET AL. make a clear case for the use of border taxes in countries with stringent legislation on CO<sub>2</sub> emissions. They clearly show that without border taxes, national regulations and taxes to curb CO<sub>2</sub> emissions will be circumvented by offshoring production elsewhere. They also provide the necessary information to start calculating such taxes.

## References

FERNÁNDEZ-AMADOR ET AL., JOSEOH F. OCTAVIO AND PATRICK TOMBERGER, (2016), MRIO linkages and Switzerland's CO<sub>2</sub> profile, *Aussenwirtschaft* 67(3): 47-63.