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**Harmony in Trade:**

**Impact of Ecological Label and Social Label from a Global Perspective**

**Peibin Hou**

**School of Agricultural Economics and Rural Development  
Renmin University of China  
[peibin\\_h@ruc.edu.cn](mailto:peibin_h@ruc.edu.cn)**

**Xiangwen Kong\***

**Department of Agricultural Economics and Rural Sociology  
Auburn University  
[xiangwen.kong04@gmail.com](mailto:xiangwen.kong04@gmail.com)**

**Falin Sun**

**School of Agricultural Economics and Rural Development  
Renmin University of China  
[falin.sun@ruc.edu.cn](mailto:falin.sun@ruc.edu.cn)**

**Huanguang Qiu**

**School of Agricultural Economics and Rural Development  
Renmin University of China  
[hgqiu@ruc.edu.cn](mailto:hgqiu@ruc.edu.cn)**

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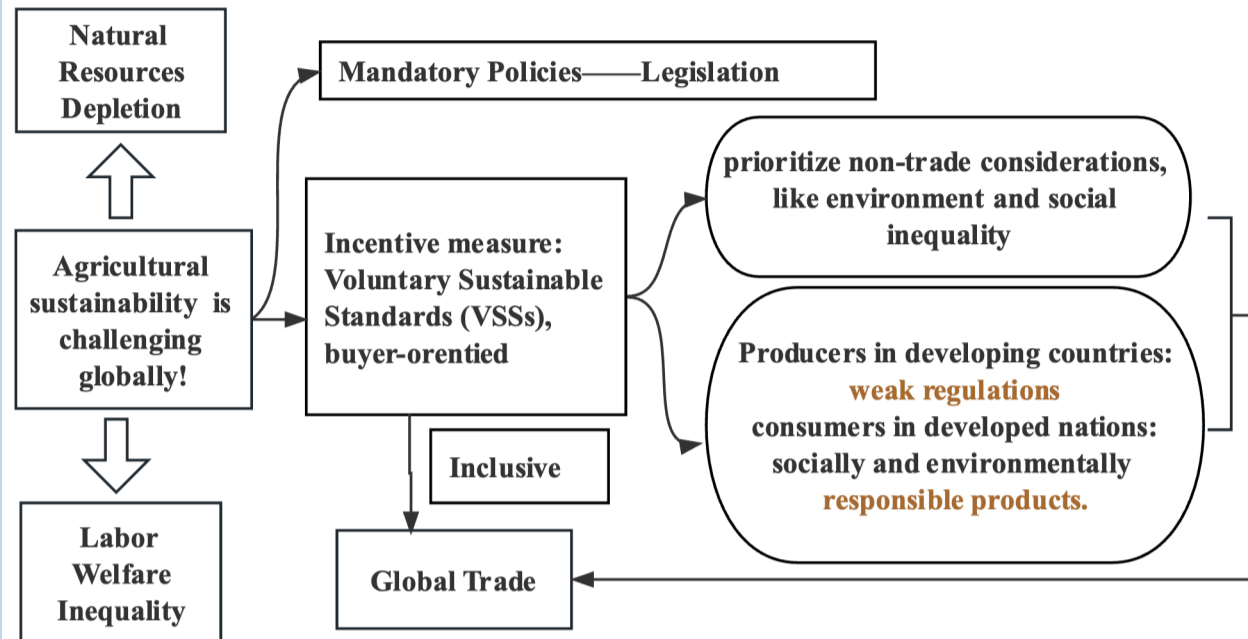
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# Harmony in Trade: Impact of Ecological Label and Social Label from a Global Perspective

Peibin Hou M.S.,<sup>1</sup> Xiangwen Kong<sup>2\*</sup>, Falin Sun, M.S.<sup>1</sup> and, Huanguang Qiu<sup>1</sup>

<sup>1</sup>Renmin University of China <sup>2</sup>Auburn University

## Motivation



## Theoretical

*i* denotes importer, and *k* denotes exporter

### Demand side

$$\max U_i = \left( \sum_q \beta_q \frac{1}{\sigma} q_{qi} \right)^{\frac{\sigma-1}{\sigma}}$$

$$\text{s.t.: } \sum_q p_{qi} q_{qi} = y_i, \beta_q = \beta_q(0) * e^{\varepsilon_i q t}$$

$\beta_i$ : environment pressure;  
 $\varepsilon_i$ : change rate of  $\beta_i$

### Supply side

$$\max_{q_{ki}} \sum_k (p_k q_{ki} - t_{ki} p_k q_{ki} - \frac{w_k}{\theta_k} q_{ki} - f_{ki})$$

$f_{ki}$ : fixed overhead cost  
 $t_{ki}$ : trade cost  
 $w_k$ : wage

All producers in country *k* have common productivity  $\theta_k$ .

### Specification in theory

$$\ln X_{ki} = (1 - \sigma) \ln w_k - (1 - \sigma) \ln(\theta_k(1 - t_{ki})) - \sigma \ln t_{ki} + (1 - \sigma) \ln \beta_k - (1 - \sigma) \ln P_i + \ln y_i$$

## Here's the baseline result.

	Intensive Margin			Extensive Margin		
	FE	BB	IV	FE	BB	IV
Eco_VSS_1	0.075*** (0.01)	0.075*** (0.01)		0.017*** (26.58)	0.017*** (22.98)	
Soc_VSS_1	0.004 (0.01)	0.004 (0.01)		0.008*** (23.09)	0.008*** (19.20)	
Eco_VSS			0.101*** (0.01)			0.015*** (28.06)
Soc_VSS			0.005 (0.02)			0.006*** (23.89)
Observations	378,681	898,737	407,063	378,681	898,737	407,063
Control	YES	YES	YES	YES	YES	YES
Country-pair FE	YES	NO	YES	YES	NO	YES
Exporter-Time FE	YES	YES	YES	YES	YES	YES
Importer-Time FE	YES	YES	YES	YES	YES	YES
Commodity-Time FE	YES	YES	YES	YES	YES	YES

Robust country-pair-product clustered standard errors in parentheses.

### Agriculture index (EPI report)

IV

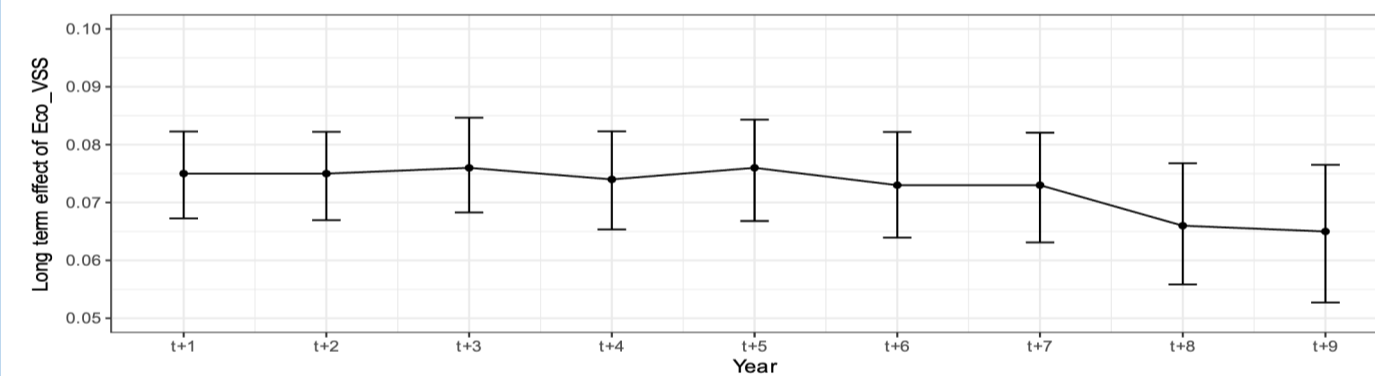
Eco\_VSS

### Social Inequality Index (NO-GAINS)

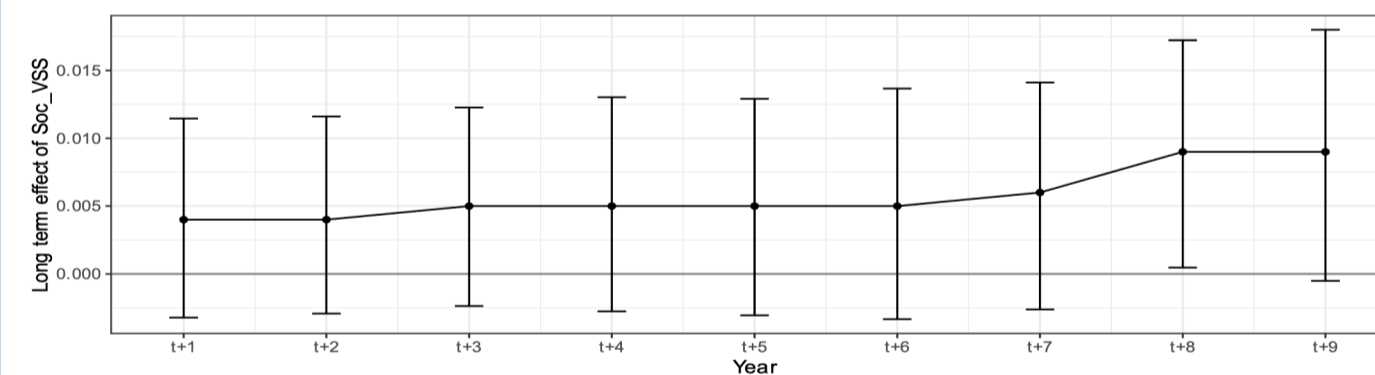
IV

Soc\_VSS

## What about the long term effect?



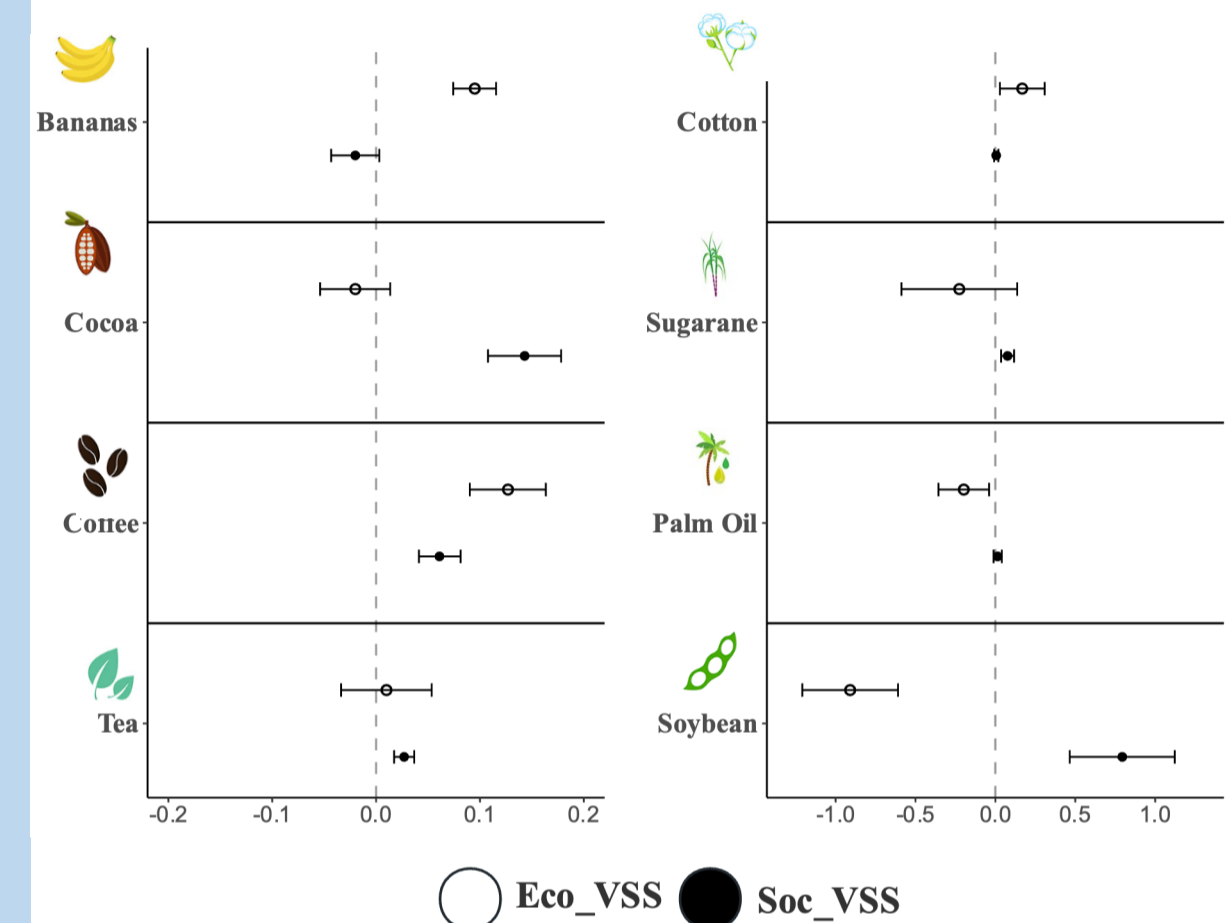
A lasting positive impact of Eco-VSS, but a decline trend starting from the fifth year.



Significant effect of Soc-VSS needs to take time.

## Heterogeneity

### By crop



Note: The Eco-VSS coefficient and intervals of palm oil is reduced by a factor of 10 for the visualization.

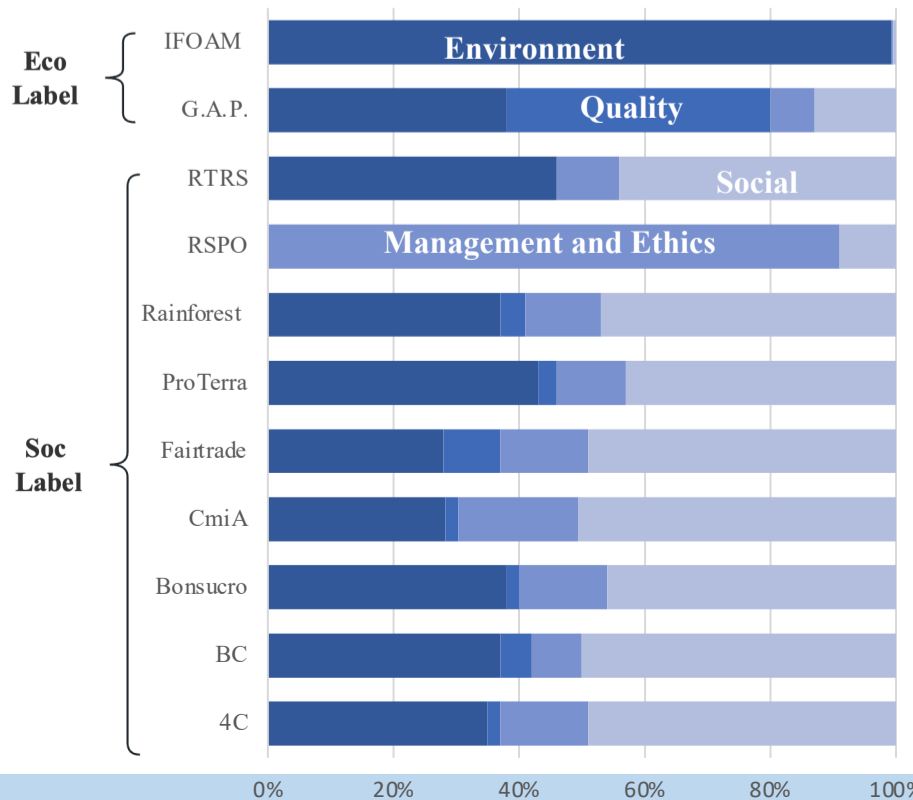
## Conclusion

- We find a significant and robust positive effect of Eco-VSS adoption ratio on export values across all specifications by about 7.5-10.1% in the short term, signaling an export-facilitating effect of Eco-VSS adoption in agricultural commodity sectors. In the long run the positive effect declines from fifth years.
- There's no significant positive impact of Soc-VSS on export value, while in the 8<sup>th</sup> year, the positive effect shows up.
- For input-intensive crops, Eco-VSS positively effect the trade. Likewise, labor-intensive crops, Soc-VSS significantly have positive impacts.

## Acknowledgment

Thanks to the ITC Standards Map, we were able to obtain panel data spanning 11 years on crop-certified areas, production, and certificate holders under various types of agricultural commodities of VSS. <https://www.standardsmap.org/en/>

## Voluntary Sustainable Standards



### Data:

We compiled a VSS verification data set covering 8 crops in 12 VSSs from 2010 to 2020, which are bananas, cocoa, coffee, cotton, palm oil, soybean, sugarcane, and tea.

### Research objectives:

We empirically investigate trade implications of voluntary sustainability standards (VSS) Specifically:

- Both intensive and extensive margin.
- Both short term and long term effect.
- Crop heterogeneity.

