Welfare and Trade Effects of Brazil's Temporary Import Ban on Robusta Coffee

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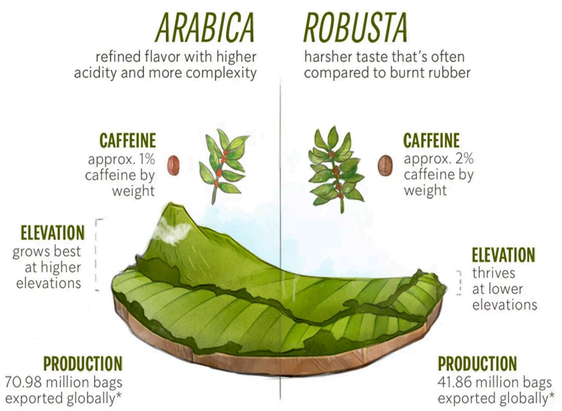
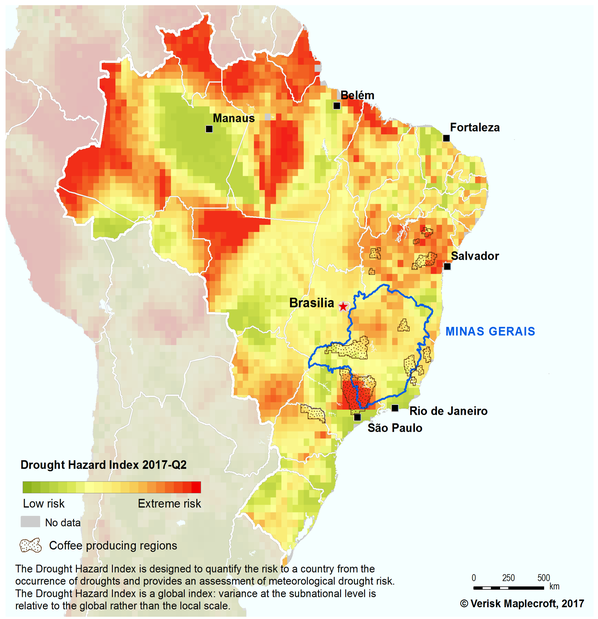
Introduction

- Brazil is a prominent global supplier of Robusta coffee. However, droughts and poor harvests can lead to temporary imports.



- In 2016/2017 marketing year, a drought in Brazil led to a decline in 30% Robusta bean production, prompting the government to allow temporary imports of one million 60-kg bags of Robusta coffee from Vietnam, but then President Temer suspended the order prior to the onset of imports due to rent-seeking pressure by coffee farmers.



- This Brazilian case is not isolated. The case of natural exporters imposing trade restrictions occurs quite often in agriculture. It is an outcome of rent-seeking by industries to secure rents in case of shock or to reduce competition in some sub-segment of the market.

Objective

- We analyze welfare and trade implications of the drought episode and associated import ban for domestic and foreign market participants of Soluble coffee and green Robusta beans.

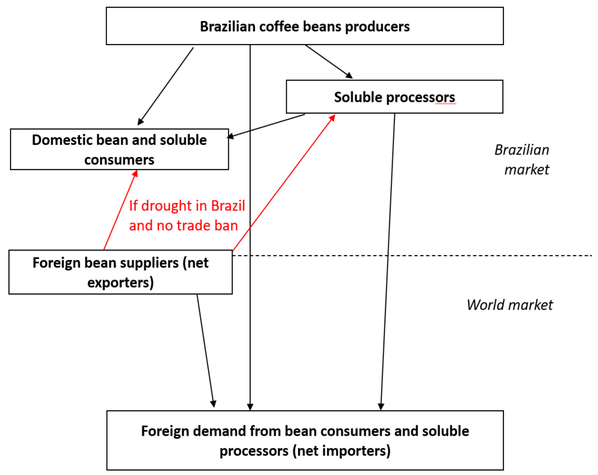
Methods

- We build a model utilizing two approaches (equilibrium displacement model, model with variables in levels) that account for domestic and export demands of Robusta bean and soluble coffee, domestic derived demand of Robusta bean in soluble, and output response function in levels that allows us to solve for endogenous Robusta bean and soluble coffee price that react to the initial shock in supply and then the imposed temporary import ban. Constant return to scale is assumed in soluble processing.

- We calibrate the model using recent data from Brazilian agricultural statistics and from the Brazilian Coffee Exporter Council.

- We assume very low substitution elasticity for Robusta coffee beans in soluble coffee and CRS in domestic soluble coffee production as well as very inelastic green Robusta coffee supply.

- Brazil is a large exporter of Robusta bean in normal conditions. We model the trade reversal by explicitly putting constraint on trade during the drought. Then we measure the welfare by removing the trade ban and looking at how much import from the world market Brazil would have taken into the domestic market, if there were no trade ban.



Results & Discussion

- The exogenous shock in Robusta production reduces the domestic supply of Robusta beans and induces a price increase and a trade-pattern reversal from exports to imports of Robusta beans. The ban had implications for both domestic and global markets, affecting prices and trade patterns.

- The world price of Robusta increases as a result of Brazilian imports. The higher price of Robusta beans also feeds back into soluble coffee unit cost and price in Brazil.

		Drought without trade ban	
Variable	**Drought and import ban**	**World excess supply elasticity ε=5**	**World excess supply elasticity ε=10**
Local price green bean	138.45	123.83	114.01
border price green bean	124.25	138.69	127.7
Price soluble	177.68	163.27	153.64
Cost share of beans in soluble	0.77	0.759	0.744
Derived demand green bean	4.84	5.22	5.25
Final demand green bean	5.39	5.45	5.49
Total demand green bean	10.23	10.67	11.02
Exports (imports) green bean	0	-0.25	-0.6
Production green bean	10.5	10.42	10.41
Local demand soluble	1.09	1.099	1.105
Export demand soluble	3.75	4.11	4.4
Production soluble	4.84	5.2	5.5

- The model indicates that the import ban helped Brazilian producers but hurt soluble processors and final consumers in Brazil, while major Robusta exporters, such as Vietnam, suffered from the ban via lower prices. Foreign consumers of Brazilian soluble faced higher prices. The results suggest that trade restrictions imposed by natural exporters can have elaborate consequences.

- We evaluate welfare implications of removing the import ban for each market participant using Marshallian surplus measures as well as the welfare implications of the original drought shock.

Welfare implications of removing the import ban

			w/ε=5	w/ε=10
C.S.	DOMESTIC	SOLUBLE	15.77	26.38
		GREEN BEAN	79.23	132.97
	ROW	SOLUBLE	56.59	95.05
		GREEN BEAN	N/A	N/A
P.S.	DOMESTIC	COST SAVING (SOLUBLE)	73.53	123.29
		GREEN BEAN	-152.92	-255.51
	ROW	SOLUBLE	N/A	N/A
		GREEN BEAN	34.42	77.24

Welfare implications of the drought (tentative results to be updated)

			w/ε=5	w/ε=10
C.S.	DOMESTIC	SOLUBLE	-28.42	-15.91
		GREEN BEAN	-143.83	-80.55
	ROW	SOLUBLE	-115.78	-66.46
		GREEN BEAN	N/A	N/A
P.S.	DOMESTIC	COST SAVING (SOLUBLE)	-145.37	-80.9
		GREEN BEAN	-206.23	-502
	ROW	SOLUBLE	N/A	N/A
		GREEN BEAN	N/A	N/A

Conclusions

Established exporters can use protectionist policies which increase producers' rent in some states of the world like a drought.

Welfare loss to consumers of coffee beans and soluble coffee from the trade ban were comparable to the initial welfare loss induced by the original drought shock. Their relative magnitudes depend on the price elasticity of the excess demand and supply in the world market.

The trade ban more than offsets the loss to producers induced by the original drought shock. The ban is a very effective way to transfer surplus from consumers and users to coffee farmers

The ban impacted foreign market participants (higher price of soluble and lower trade opportunities for net-exporting foreign suppliers like Vietnam). Current work involves quantifying these welfare impacts