



Climate Change and Trade Policy

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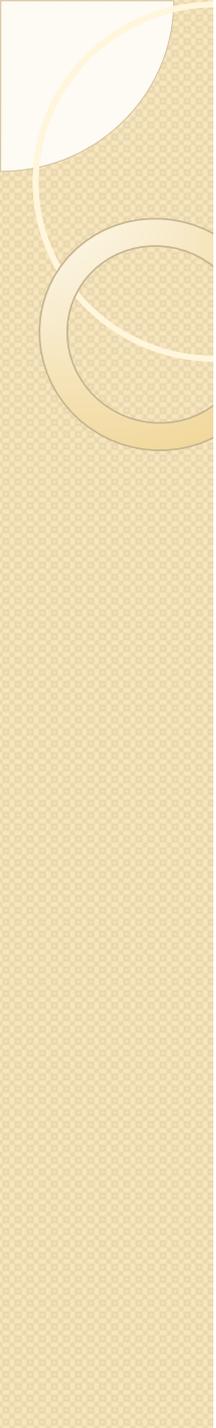
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*World Bank. The views expressed are those of the author alone

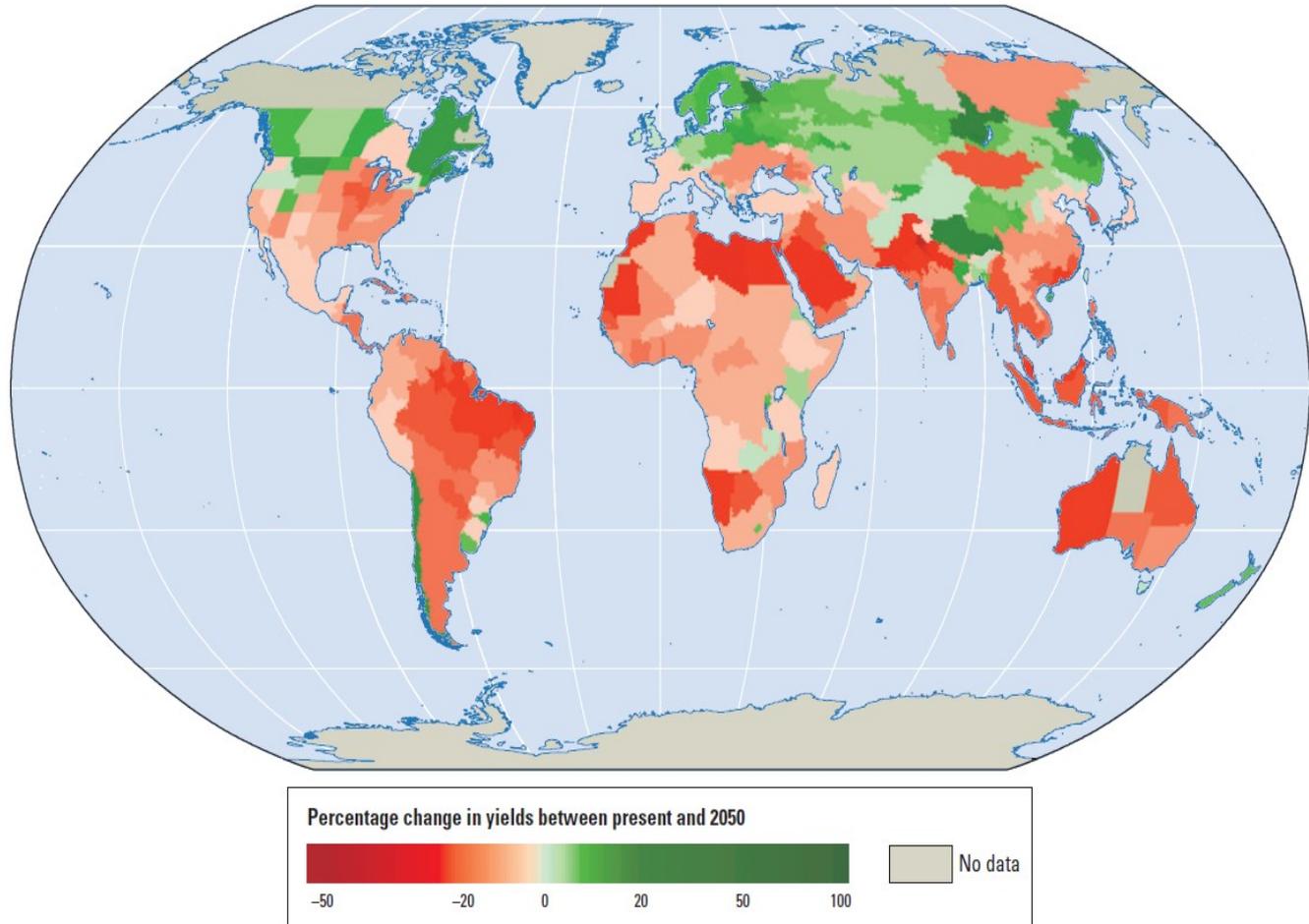
Roadmap

- Implications of changes in trade patterns
- Implications of volatility for trade policy
- Border Tax Adjustments



Implications of changes in trade patterns

Regions likely to be affected differently



11 key crops. 2046-55 vs 1996-2005 Source: World Bank (2010)

Scenarios and policy responses

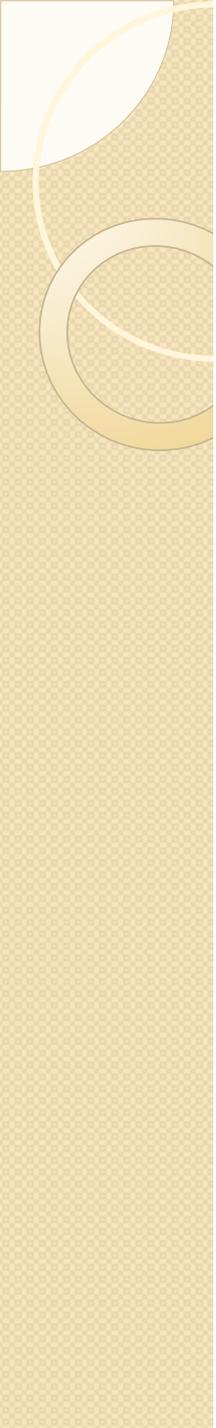
- Average yields to fall globally
 - And hence world prices to rise
- Typically larger yield falls in tropical areas
 - Threats of poverty and to food security from:
 - (i) falls in farm income on which most poor people depend
 - (ii) increases in food prices on which the poor spend heavily
- Increases in prodn in some temperate regions
- Likely very large changes in trade patterns
- Pressure on policy makers to protect in food importing countries

Effects of protection

- Would likely increase production in importing regions
- But would have adverse impacts on the food security of individual consumers
 - Access to food reduced by higher prices
- Most poor farmers in low-income countries are net buyers of food
 - So their incomes would be reduced by protection
- The key responses involve raising productivity, increasing resilience &

Type of trade policy

- Need policies that can accommodate changes that are likely large, but uncertain
- Price-based measures much more likely to adjust than quantity-based measures such as quantitative restrictions



Impacts through changing volatility

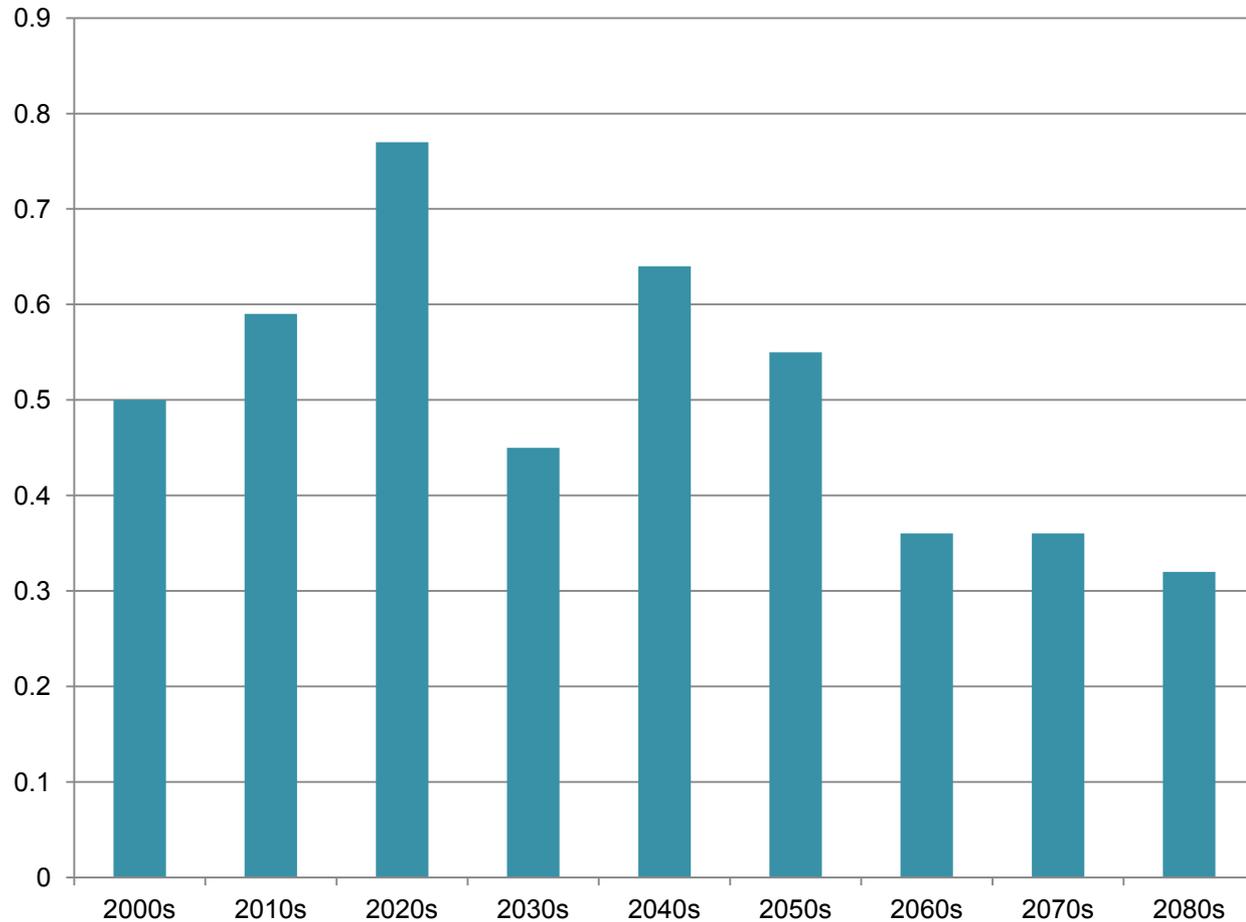
Climate volatility

- Weather volatility seems likely to increase
 - More temperature and precipitation extremes
 - Creates rapid & unanticipated volatility in output
- Results in higher price volatility in isolated markets
 - Or markets that switch between import and export status
 - Supply slow to adjust, demand inelastic
 - Especially when stocks are low
- Price spikes when stocks are low are a major threat to the poor

Analysis: Tanzania's maize export ban

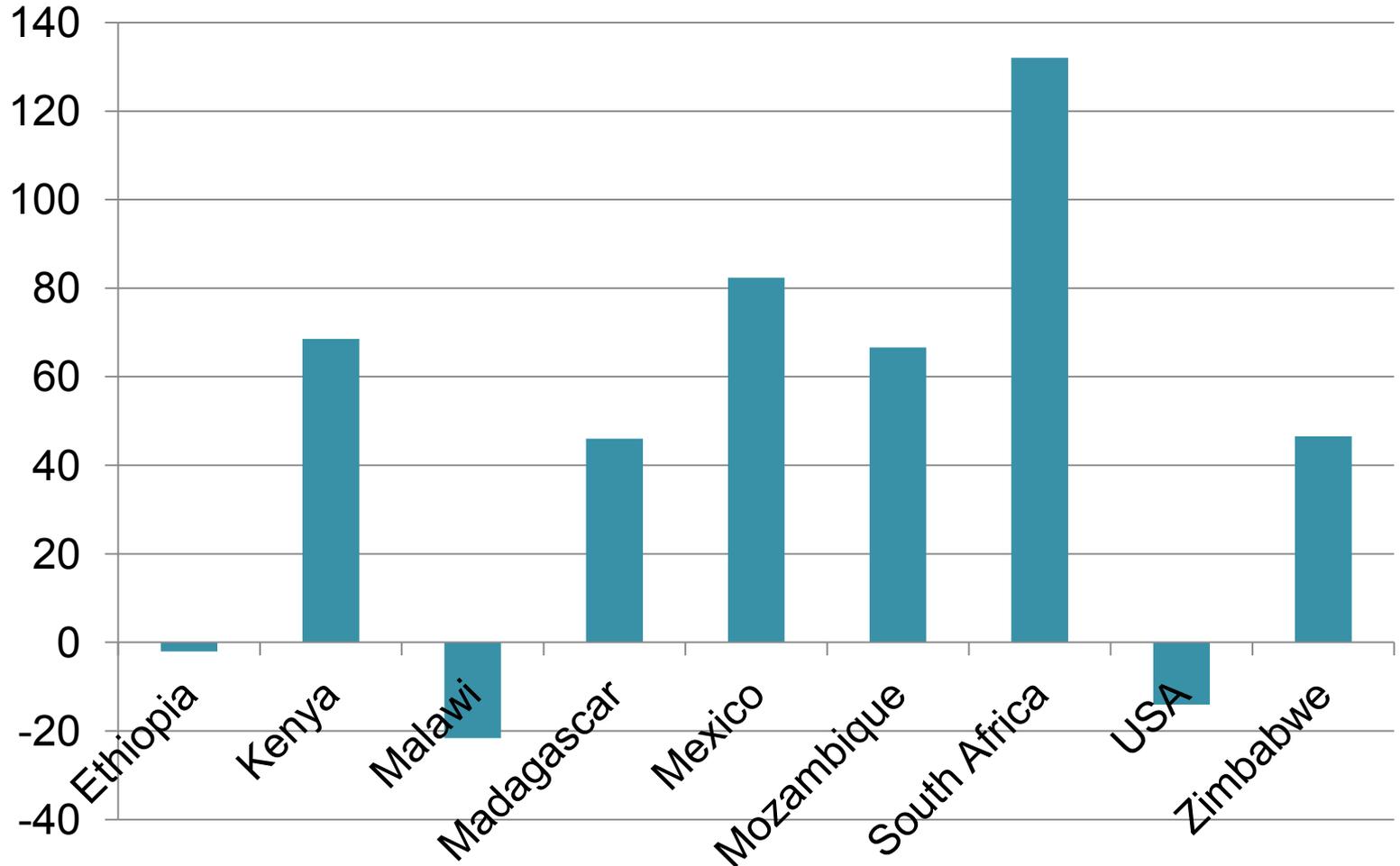
- Use model results from well-known climate models
 - Focus on a scenario where temp rises 2-4
 - Atmospheric CO₂ reaches 6-800 ppm by end C21
- Use 1951 to 2000 rainfall data
 - Look at the 5 driest years
- Consider the frequency of years drier than this bottom 10% in future years
 - 0.5 means half as many dry years
 - 2.0 means twice as many
- Ignore the rise in temperatures

TZA: Relative frequency of dry years



Potential export opportunities

% change in # of dry years when TZA not dry



Volatility & trade policy

- Output volatility likely to increase
- Makes price & output volatility reduction through diversification more important
- Quantitative restrictions like export bans particularly damaging
 - Measures that target availability of food increase volatility because availability is known only with a lag and policy responses involve lags
 - And the critical issue is ensuring access
 - Which is prejudiced by price volatility

Collective action & price

volatility

- Many countries seek to reduce price volatility by varying protection
 - Europe tariffs that vary inversely with world price
 - SSG and proposed price-based SSM
- Successful for individual, small countries
- But nearly all countries try to do this
 - Result is ineffective- like standing in a grandstand
 - Just increases the volatility of world prices
- Trading system rules need to gradually



Border Tax Adjustments (BTAs)

Climate change mitigation policies

- Kyoto protocol attempts to restrict emissions by putting a price on carbon
 - Tradable permits equivalent to a carbon tax
- This is a tax on output of CO₂
 - Domestic sales of the good are taxed and so are exports of the good
 - The tax might have been configured as a tax on consumption (rather than output) of goods that are carbon-intensive
 - Tax imports & domestic sales of the good

Concern about “leakage”

- Arises when not all countries participate in the carbon mitigation regime
- If domestically-produced goods subject to a carbon tax & imported not there is ‘leakage’ to imported goods from non-participants
 - This is an inherent feature of partial coverage
 - If the tax were on consumption of CO₂ nontaxed exports would increase lowering prices & increasing consumption in the rest of the world
- Adding a BTA to an output tax means double taxing trade

Serious risks of disguised trade barriers

- BTA based on costs imposed by home measures likely consistent with WTO rules
 - Question about double-taxing of trade?
- Measures that put bigger charges on imported than domestic likely violate WTO
 - If done fairly would frequently involve lower charges than on domestic producers
 - But serious risks in the way these charges

Conclusions

- Climate change is likely to dramatically shift production patterns
 - Trade policies need to accommodate
- Qty & Price volatility likely to increase
 - Diversification thru trade → more important
 - Avoid QRs that target availability
- Border tax adjustments
 - Leakage is inherent when not all participate
 - Risk of inadvertently double-taxing trade

References

Ahmed, S.A, Diffenbaugh, N., Hertel, T. and Martin, W. (2012) 'Agriculture and trade opportunities for Tanzania: past volatility and future climate change' *Review of Development Economics* 16(3):429–47.

Anderson, K., Ivanic, M. and Martin, W. (2013), Food price spikes, price insulation, and poverty, Policy Research Working Paper 6535, World Bank.

Martin, W. and Anderson, K. (2012), 'Export restrictions and price insulation during commodity price booms' *American Journal of Agricultural Economics* 94(2):422-7.

Mattoo, A. , Subramanian, A., van der Mensbrugghe, D. and Jianwu He (2009), 'Reconciling Climate Change and Trade Policy' Policy Research Working Paper 5123, World Bank.

World Bank (2010) '*World Development Report 2010: Development and Climate Change*, World Bank, Washington DC.