Structural Reforms and Agricultural Export Performance
An Empirical Analysis

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INTRODUCTION

- Structural reforms: policy measures that reduce or remove impediments to the efficient allocation of resources.
- Structural reforms would imply reduced government interventions, including such as (1) removal of state-imposed price control, (2) abolition of state monopolies, (3) fewer restrictions on trade and domestic financial transactions.
- Structural reforms include: (1) domestic financial reform, (2) trade reform, and (3) agricultural reform

INTRODUCTION

- Domestic financial reform began in the 1980s and accelerated in 1990.
- Trade liberalization policies have been widely adopted in most (developing) countries. As a result, trade regimes have become more open
- Agriculture sector has been the subject of reforms with less government intervention. Countries like India, Indonesia, Brazil, Argentina, among others have reduced their interventions

Financial Reform

**Financial Reform is measured by domestic financial liberalization.
The index is constructed based on seven different dimensions of
financial sector policy (Abiad et al., 2010; Spilimbergo, et al., 2009)**

1. credit controls and excessively high reserve requirements,
2. interest rate controls,
3. entry barriers,
4. state ownership in the banking sector,
5. financial account restrictions,
6. prudential regulations and supervision of the banking sector,
7. securities market policy.

Financial Reform Index
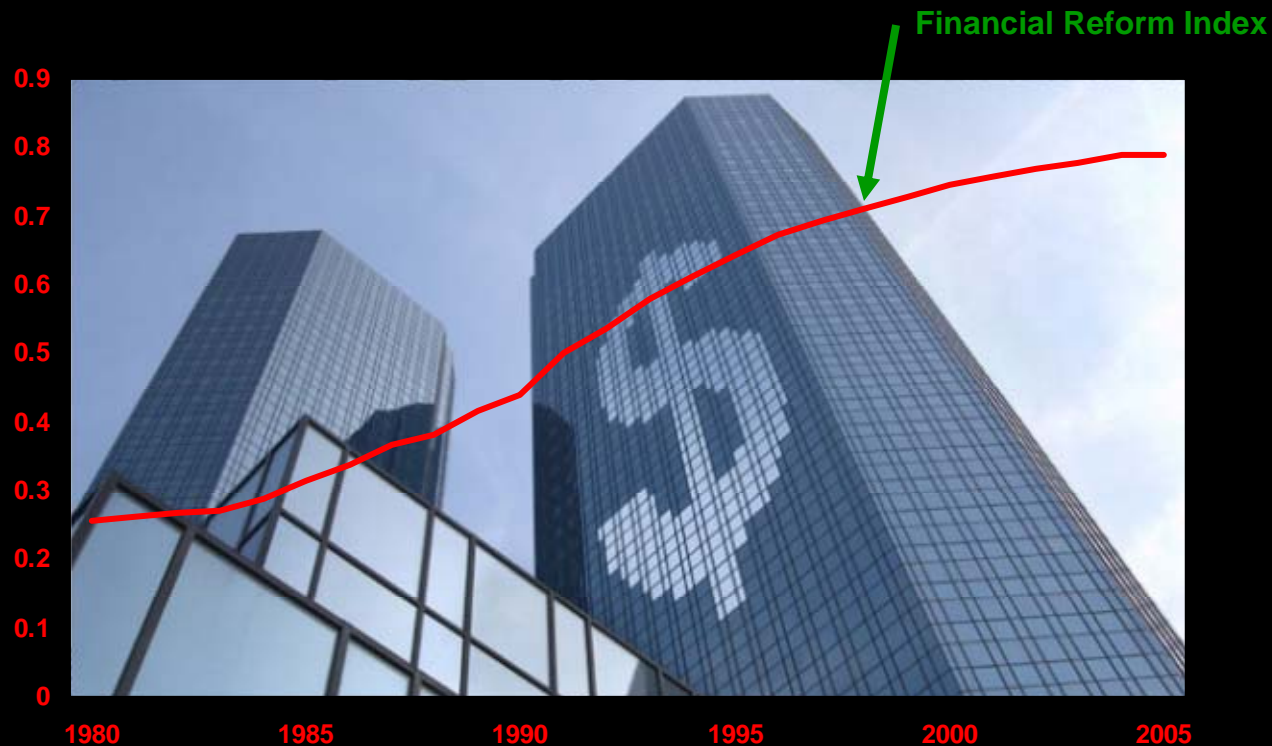
Trade Reform

Trade Reform is constructed by using average effective tariffs as a measure. It is calculated as the ratio of customs and import duties to the value of imports (Spilimbergo et al., 2009)

Trade Reform Index

Agricultural Reform

Agricultural Reform captures intervention in the markets for the main agricultural export commodity in each country (Spilimbergo et al., 2009)

Agricultural Reform Index
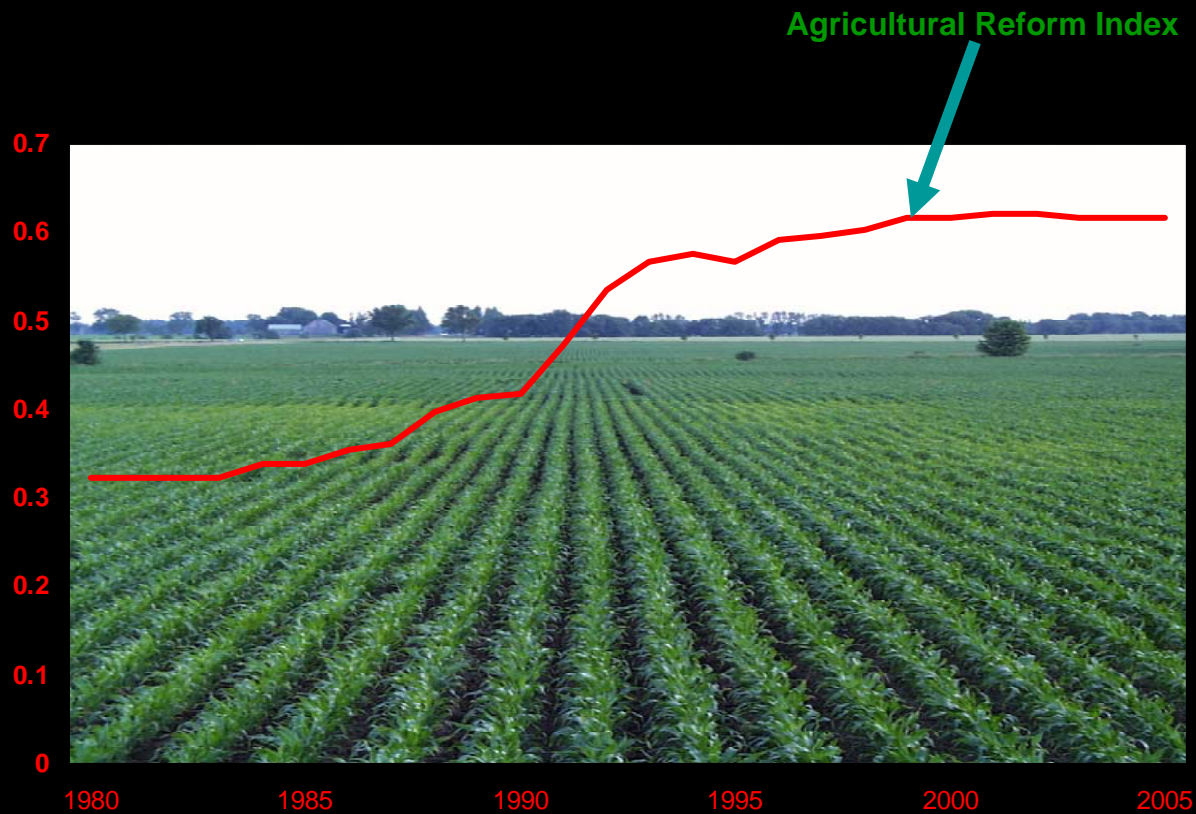
Objective

Assess the extent to which structural reforms (financial, trade, and agricultural reforms) have contributed to bilateral trade flows

Empirical model : The Gravity Equation

$$\ln T_{ijt} = \alpha_i + \gamma_j + \nu_t + \beta_1 LGDP_{ijt} + \beta_2 LGDPI_{ijt} + \beta_3 LGDPP_{ijt} + \beta_4 LDIS_{ij}$$

$$+ \beta_5 Language + \beta_6 Border + \beta_6 RTA + \delta_1 FinReform + \delta_2 TradeReform$$

$$+ \delta_3 AgricReform + u_{ijt}$$

LGDP   : bilateral overall country size
LGDPI   : index of relative country size
LGDPP : difference in relative factor endowment
LDIS   : geographic distance (log values)
FinDev : Financial development index (Abiad et al, 2010)
Language : Dummy variable for language
Border : Dummy variable for border
RTA   : Regional trade agreement
FinReform: Financial reform index
TradeReform : Trade reform index
AgricReform : Agricultural reform index

Empirical model : The Gravity Equation

$$LGDP_{ijt} = Ln(GDP_{it} + GDP_{jt}),$$

$$LGDPI_{ijt} = Ln\left[1 - \left(\frac{GDP_{it}}{GDP_{it} + GDP_{jt}}\right)^2 - \left(\frac{GDP_{jt}}{GDP_{it} + GDP_{jt}}\right)^2\right]$$

$$LGDPP_{ijt} = \left|Ln\left(\frac{GDP_{it}}{N_{it}}\right) - Ln\left(\frac{GDP_{jt}}{N_{jt}}\right)\right|$$

Why Financial Reform?

☑ Based on theoretical papers: Kletzer and Bardhan (1987) and Baldwin (1989), Beck (2002, 2003), Muuls (2008), Manova (2008) - liquidity constraints

☑ the liquidity constraints: firms in financially developed countries face less restrictive credit constraints and therefore can increase investment in response to a lowering of variable export costs and all firms with productivity above a certain cut-off level become exporters

☑ A model with credit-constrained generally predicts that financially developed countries are more likely to export bilaterally and ship greater volumes

Data

- ☑ Bilateral exports of agricultural products: 78 countries from 1980 to 2010 from UN COMTRADE database.

- ☑ Structural reform indices:
  Abiad et al. (2010)
  Spilimbergo et al (2009)

Table 1: Summary Statistics of Variables

Variable	Mean	SD	Min.	Max	N
Agricultural exports (ln)	14.94	3.09	0.69	23.71	114,035
Geographic distance (ln)	8.61	0.89	4.70	9.89	114,035
LGDP	5.95	1.39	1.37	9.93	112,231
LGDPI	-1.89	1.24	-8.88	-0.69	112,231
LGDPP	1.78	1.26	0.00	5.89	108,928
Financial reform index	0.66	0.26	0.00	1.00	113,445
Trade reform index	0.78	0.19	0.00	1.00	113,163
Agricultural reform index	0.58	0.35	0.00	1.00	97,976

Data are panel average for the year of 1980 to 2010 and 2352 individual of pair-countries.
The numbers of observations (N) depend on the availability of the data for each variable.

Regression Results
Impacts of Structural Reforms on Total Agricultural Exports

Variable	FE	RE	HT
LGDP	1.027 (0.029)***	1.057 (0.028)***	1.047 (0.028)***
LGDPI	0.252 (0.028)***	0.404 (0.023)***	0.231 (0.027)***
LGDPP	-0.324 (0.017)***	-0.188 (0.013)***	-0.287 (0.015)***
LDIST	-	-1.372 (0.034)***	-1.336 (0.051)***
BORDER	-	-0.069 (0.120)	-0.082 (0.176)
LANGUAGE	-	0.489 (0.073)***	0.546 (0.108)***
RTA	0.162 (0.027)***	0.159 (0.026)***	0.168 (0.026)***
FinReform	0.511 (0.051)***	0.492 (0.051)***	0.506 (0.051)***
TradeReform	0.752 (0.045)***	0.740 (0.045)***	0.741 (0.045)***
AgricReform	0.142 (0.035)***	0.144 (0.035)***	0.142 (0.035)***
Intercept	9.217 (0.222)***	15.146 (0.453)***	15.047 (0.630)***
Observations	89,357	89,357	89,357

FE: Fixed Effects; RE: Random Effects; HT: Hausman-Taylor
Dependent variable: Log of total agricultural exports.

Regression Results
Impacts of Structural Reforms on Agricultural Exports
(Random Effects)

Variable	SITC-0	SITC-1	SITC-4
LGDP	1.124 (0.029)***	1.016 (0.043)***	0.767 (0.056)***
LGDPI	0.459 (0.023)***	0.634 (0.033)***	0.459 (0.043)***
LGDPP	-0.182 (0.014)***	-0.177 (0.019)***	-0.044 (0.024)
LDIST	-1.331 (0.035)***	-1.233 (0.042)***	-1.476 (0.050)***
BORDER	0.043 (0.122)	-0.039 (0.144)	0.377 (0.157)**
LANGUAGE	0.483 (0.075)***	0.439 (0.091)***	0.012 (0.105)
RTA	0.161 (0.027)***	0.219 (0.034)***	0.213 (0.041)***
FinReform	0.375 (0.053)***	0.143 (0.076)*	1.037 (0.099)***
TradeReform	0.721 (0.047)***	0.984 (0.070)***	0.560 (0.085)***
AgricReform	0.122 (0.036)***	0.410 (0.061)***	-0.666 (0.081)***
Intercept	14.779 (0.463)***	14.033 (0.614)***	16.260 (0.751)***
Observations	86,500	59,301	45,559
R-squared	0.653	0.608	0.508

SITC-0: Food and Live Animals
SITC-1: Beverages and Tobacco
SITC-4: Animal and Vegetable oils and Fats

Impacts of Financial Development on Trade (%)
(One SD from the Mean)

Variable	Total	SITC0	SITC1	SITC4
Financial Reform	13.6	10.2	3.8	30.9
Trade Reform	15.1	14.7	20.6	11.2
Agricultural Reform	5.2	4.4	15.4	-20.6

Note: Percentage changes are based on one standard deviation increase from the mean and are estimated using the results given by RE procedure.

KEY FINDINGS

- ❖ Less restricted credit constraints, reduced tariff rates, and less government interventions are likely to generate increase in total agricultural exports.
- ❖ Relatively small impacts of agricultural reforms (and negative on SITC4): reforms may not have been actually implemented, particularly in developing countries (SSA countries) because of inadequate attention to the institutional foundations of markets

Implications

❖ Provides a solid policy foundation for pursuing structural reforms. This is particularly true given that there is still a wide margin of unexploited potential for the introduction of additional reforms.

❖ A country with a low level of financial development should benefit of pursuing financial reforms because exports would be expected to rise.