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# Trade, Tastes, and Nutrition in India

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# Content

## Introduction

**Research Questions**

- How do regional tastes form and persist over time?
- What impact do the taste have on nutritional outcomes after trade liberalization?

**Core Hypothesis**

- Habit Formation.
  Household tastes evolve over time to favor foods consumed as a child, leading to a preference for locally abundant foods in each region since it is relatively inexpensive.

- Gains from Trade.
  Gains from trade are overstated when the heterogeneity of taste is ignored, as preferred foods will become more expensive after open to trade.

## Introduction

**Methodology**

- Overlapping-generations general equilibrium model
  - After many generations, habits lead to local food tastes that favor crops relatively well suited to local agro-climatic endowments.
  - Trade liberalization causes a relative price in region's favored foods, which reduces social welfare (bigger than income effect).
- Empirical Test
  - The nutritional impacts of price changes in India, treating it as small, partially closed economy.
  - Using rural household survey data from 77 agro-climatic regions.

## Background on Agricultural Trade in India

**Restricted domestic trade**

- The Essential Commodities Act (1955)
  Empowers both national and state governments to impose
  extensive restrictions on the production, supply, and trade of
  food.
- Tariffs and High transport cost
  State-level tariffs, district entry taxes (Octroi), and over 400
  trade rules restrict internal trade, collected at often corrupt
  checkpoints
- State governments intervention
  The Commission on Agricultural Costs and Prices sets
  minimum only available in certain regions, while state levies
  require private mills to supply grain at a fixed price.
- Limited Impact of External Trade Liberalization
  WTO-driven agriculturere forms left high tariffs

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## Background on Agricultural Trade in India

**Internal markets are far from inetgrated**
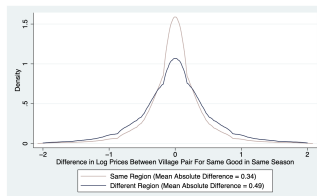


Figure 1: Dispersion of Village Median Prices (1987-1988)

Table 6: Price Responses to Weather Shocks

|  | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
|  | $\ln p_{irgt}$ (regional prices) | | $\ln p_{idgt}$ (district prices) | |
| F-Test on Flexible Weather Deviations | 470.9*** | 116.1*** | 80.08*** | 64.18*** |
| Item-Quarter-Year FE | Yes | Yes | | |
| Item-Region FE | No | Yes | | |
| Item-Region-Quarter-Year FE | | | Yes | Yes |
| Item-District FE | | | No | Yes |
| Observations | 51,882 | 51,882 | 229,200 | 229,200 |
| Number of Quarters | 16 | 16 | 16 | 16 |
| $R^2$ | 0.949 | 0.976 | 0.975 | 0.980 |

Figure 2: Price response to weather shock

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# Modelinng Prefernces

- Overlapping generation
  - Individuals in two regions live for two stages of life, childhood and adulthood, that each last one period.
  - There are two goods, rice and wheat, w, with one unit of each good providing one calorie.
- Habit Formation
  Tastes develop based on foods commonly consumed in childhood. If there is no habit formation or if rice and wheat are consumed equally in childhood, tastes remain unbiased.

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## Production

- Labor Each region has a fixed endowment of laborers, L, that are mobile between the two sectors (rice and wheat)
- Land
  - Different land suitable for rice cultivation and wheat cultivation.
  - Endowment comparative advantage: relatively more rice land or wheat land

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## Equilibrium Tastes in Period T

- Iceberg trade cost
  More than one unit of a good must be sent for a single unit to
  reach the destination.
- Equilibrium in autarky
  - Households in rice-abundant region consume more rice than
    wheat due to rice are cheaper.
  - As children in these households grow up, they develop a
    preference for rice.
  - Over generations, habit formation shapes local tastes to favor
    crops best suited to regional agro-climatic conditions.

**If price increases focus on favored foods, households experi-
ence limited consumption gains, as their preferred foods be-
come more expensive**

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## Gains from Trade Liberalization

Three effect will affect the gains from trade.

- Wealth Effect
  When trade liberalization causes favored foods to rise in price , households face a reduction in purchasing power, limiting the expected caloric or nutritional gains from trade.

- Reallocation Effect
  trade brings more inexpensive options for household. However, with habit-formed preferences, households are less flexible in substituting away from their favored foods.

- Factor Income Effect
  specialization increase the nominal income of house hold. Since households allocate a large share of their budget to locally preferred foods, rising prices for these foods may outpace any income gains, particularly for landless laborers.

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## Testable Implications

- Implication 1. Rice tastes decrease with past relative rice price.
- Implication 2. The budget share spent on rice depends on past prices after conditioning on current prices and income.
- Implication 3. Household tastes in period T favor the endowment-comparative-advantage food.
- Implication 4. Household tastes at the start of period T are biased towards the food for which a region has a relatively low price compared to the other region.
- Implication 5. Habit formation reduces the potential caloric gains from trade liberalization

The results of this model is robust

## Data

**household data from the Indian National Sample Survey (NSS)**

- Year
  He primarily use data from the 1987-88 round. He also I also use four other rounds (1983, 1993-94, 1999-2000 and 2004-05) both to explore changes in tastes and prices over time and to carry out robustness checks.
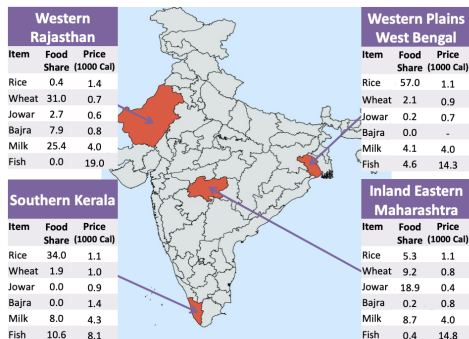
- Food
  - staple foods" grouping: focus on the consumption of the 17 cereals and legumes in the survey
  - "all foods" grouping: include 52 food products that constitute over 98 percent of food expenditure in rural areas.
  - Region
    Focus on rural areas where agricultural production takes place and barriers to trade are particularly large.

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## Indian Context

India contains 77 NSS regions drawn along agro-climatic boundaries and within the borders of the 31 states, 76 of which were surveyed in the 1987-88 sample.



Figure 3: Price and Food Expenditure Share Variation Across Regions of India, 1987-88

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## Estimating Tastes

- Price
  Dividing the expenditure on a good by the calories purchased
- Welfare
  Monthly caloric intake data for each household: multiplying each food's caloric content by the quantity consumed.
- **Taste**
  The regional component of food budget shares that cannot be explained by the vector of prices or total food expenditure provides the taste measure.

## Estimating Tastes

$$s_{gi} = \theta_{gr} d_{gr} + \sum_{g'} \gamma_{gg'} \ln p_{g'v} + \beta_g \ln \frac{food_i}{P_r^*} + \Pi Z_i + \varepsilon_{gri}$$

where:

- $s_{gi}$ : budget share
- $d_{gr}$: a full set of good-region dummy variables;
- the coefficients $\theta_{gr}$ on dummies represent regional **taste measures**.
- $\theta_{gr}$: coefficients on the good-region dummies $d_{gr}$, which are interpreted as the regional taste measures for each good in each region.
- $Z_i$: demographic and seasonal control variables
- $p_{g'v}$: the median price of good $g'$ in village $v$, assumed to be the common price faced by all households within the village. Assumptions:

## Conditions Necessary for the Identification of Tastes

It require three assumptions to identify the regional tastes implicitly.

- There must be price variation within each region in order to identify the common price.
- There must be price variation within each region in order to identify the common price,income and demographic effects.
- Regional tastes are additively separable from price and income effects.

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## Evidence for Habit Formation in Food Consumption

Implication 1. Rice tastes decrease with past relative rice price.

$$\theta_{gr,t} = \beta_0 \ln p_{gr,t} + \beta_1 \ln p_{gr,t-1} + \beta_2 \ln p_{gr,t-2} + \cdots + d_{gr} + d_{rt} + \varepsilon_{gr,t}$$

Implication 2. The budget share spent on rice depends on past prices after conditioning on current prices and income.

$$s_{gi,t} = \vartheta_{gr} d_{gr} + \sum_{g'} \gamma_{gg'}^t \ln p_{g'v,t} + \sum_{n=1}^{3} \sum_{g'} \delta_{gg'}^{t-n} \ln p_{g'r,t-n} +$$

$$\beta_g \ln \frac{food_{i,t}}{P_{r,t}^*} + \Pi Z_{i,t} + \varepsilon_{gi,t}$$

# Evidence for Habit Formation in Food Consumption

Table 1: Contemporary Tastes and Past Prices

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| LHS: | $\theta_{gr,t}$ (Staple Foods) | | $\theta_{gr,t}$ (All Foods) | |
| $\ln p_{gr,t}$ | 0.00877 | 0.00402 | -0.00634 | -0.00787 |
| | (0.00716) | (0.00892) | (0.00404) | (0.00512) |
| $\ln p_{gr,t-1}$ | -0.00245 | -0.0122 | -0.0164*** | -0.0259*** |
| | (0.00754) | (0.0109) | (0.00292) | (0.00455) |
| $\ln p_{gr,t-2}$ | -0.0308*** | -0.0477*** | -0.00729*** | -0.00921*** |
| | (0.00771) | (0.0118) | (0.00143) | (0.00150) |
| $\ln p_{gr,t-3}$ | | -0.0242** | | 0.00502 |
| | | (0.0118) | | (0.00454) |
| Region-Good, Region-Time FE | Yes | Yes | Yes | Yes |
| Observations | 3,774 | 2,448 | 11,544 | 7,488 |
| $R^2$ | 0.768 | 0.768 | 0.839 | 0.875 |

*Note:* Dependent variable $\theta_{gr,t}$ is tastes, estimated using unexplained regional variation in food budget shares. Prices $\ln p_{gr}$ are logs of weighted regional means of village median unit values. $t$ denotes consecutive NSS thick survey rounds 1983, 1987-88, 1993-94, 1999-2000 and 2004-05. Robust standard errors clustered at the region-good level. Regressions weighted by survey population weights. * significant at 10 percent, ** 5, *** 1.

# Evidence for Habit Formation in Food Consumption

Table 14: The Significance of Lagged Prices in the Demand System (Staple Foods)

| F-Test that all lagged price terms equal zero | 2 Lagged Regional Price Terms | | | | 3 Lagged Regional Price Terms | | | | | |
| | $t-1$ Region Prices | | $t-2$ Region Prices | | $t-1$ Region Prices | | $t-2$ Region Prices | | $t-3$ Region Prices | |
| | F-stat | P-value | F-stat | P-value | F-stat | P-value | F-stat | P-value | F-stat | P-value |
|---|---|---|---|---|---|---|---|---|---|---|
| Rice | 3.747 | 0.000 | 7.932 | 0.000 | 2.524 | 0.001 | 1.940 | 0.011 | 3.277 | 0.000 |
| Wheat | 7.990 | 0.000 | 4.468 | 0.000 | 4.900 | 0.000 | 4.402 | 0.000 | 3.403 | 0.000 |
| Jowar | 9.295 | 0.000 | 5.887 | 0.000 | 3.888 | 0.000 | 4.436 | 0.000 | 3.123 | 0.000 |
| Bajra | 3.348 | 0.000 | 3.245 | 0.000 | 3.002 | 0.000 | 2.427 | 0.001 | 1.706 | 0.035 |
| Maize | 3.025 | 0.000 | 4.406 | 0.000 | 4.309 | 0.000 | 2.195 | 0.003 | 2.924 | 0.000 |
| Barley | 1.762 | 0.027 | 1.599 | 0.056 | 1.059 | 0.389 | 0.751 | 0.752 | 1.225 | 0.234 |
| Small Millets | 1.666 | 0.041 | 0.798 | 0.697 | 2.585 | 0.000 | 3.259 | 0.000 | 3.392 | 0.000 |
| Ragi | 3.411 | 0.000 | 4.196 | 0.000 | 3.307 | 0.000 | 4.547 | 0.000 | 4.322 | 0.000 |
| Gram | 14.740 | 0.000 | 6.875 | 0.000 | 3.978 | 0.000 | 3.918 | 0.000 | 5.843 | 0.000 |
| Cereal Substitutes | 3.760 | 0.000 | 5.298 | 0.000 | 2.731 | 0.000 | 3.086 | 0.000 | 1.858 | 0.017 |
| Arhar | 10.884 | 0.000 | 9.823 | 0.000 | 4.425 | 0.000 | 4.203 | 0.000 | 3.209 | 0.000 |
| Moong | 7.465 | 0.000 | 5.824 | 0.000 | 4.946 | 0.000 | 5.207 | 0.000 | 4.332 | 0.000 |
| Masur | 12.074 | 0.000 | 10.194 | 0.000 | 6.344 | 0.000 | 4.669 | 0.000 | 5.552 | 0.000 |
| Urd | 11.379 | 0.000 | 17.714 | 0.000 | 4.363 | 0.000 | 2.903 | 0.000 | 2.749 | 0.000 |
| Peas | 17.016 | 0.000 | 10.627 | 0.000 | 10.948 | 0.000 | 7.331 | 0.000 | 6.083 | 0.000 |
| Soyabean | 4.039 | 0.000 | 6.982 | 0.000 | 4.932 | 0.000 | 5.750 | 0.000 | 5.210 | 0.000 |
| Khesari | 5.527 | 0.000 | 4.105 | 0.000 | 3.979 | 0.000 | 3.865 | 0.000 | 4.636 | 0.000 |

*Note:* The F-tests are for the null that historic region prices do not predict current budget shares once contemporaneous prices have been controlled for in the demand system shown in equation 5 of the main paper. Region prices $\ln p_{gr}$ are logs of weighted regional means of village median unit values. $t$ denotes consecutive NSS thick survey rounds 1983, 1987-88, 1993-94, 1999-2000 and 2004-05. The three lag term specification estimates demands in 1999-2000 and 2004-05, while the two lag specification also includes 1993-94 demands. F-tests distributed F(17,19351) and F(17,12533).

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## Tastes Relate Positively to Endowments

$$\theta_{gr} = \beta_1 \left( \frac{V_{gr}}{\sum_{g'} V_{g'r}} \right) + d_g + \varepsilon_{gr}$$

where

- $V_{gr}$: land endowment for crop $g$ in region $r$, representing the amount of land suitable or allocated for growing crop $g$ in that region.

- $\frac{V_{gr}}{\sum_{g'} V_{g'r}}$: the relative land endowment for crop $g$ in region $r$.

- $d_g$: good fixed effects, which control for characteristics specific to each crop $g$ that might influence taste preferences regardless of the region.

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## Tastes Relate Positively to Endowments

**Measurement Error**
The proportion of land planted with a specific crop is used as a proxy for regional land endowment. However current cropping patterns may reflect recent, idiosyncratic taste changes or other temporary factors rather than true historic endowments, making it a noisy measure.

**IV**

- Instruments: Agro-climatic Factors
  altitude, mean rainfall, standard deviation of rainfall, and temperature extremes, averaged over a long historical period (1955-2006).

- First Stage
  regress the agro-climatic instruments to predict the relative land endowment for each crop.

# Tastes Relate Positively to Endowments

Table 2: Tastes and Relative Resource Endowments

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| LHS: $\theta_{grt}$ | | Staple Foods | | | All Foods | |
| | OLS | IV1 | IV2 | OLS | IV1 | IV2 |
| $V_{gr}/\sum_{g'} V_{g'r}$ | 0.906*** | 1.218*** | 1.144*** | 0.467*** | 0.599*** | 0.570*** |
| | (0.0427) | (0.131) | (0.165) | (0.0261) | (0.0524) | (0.0582) |
| Good FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 1,275 | 1,275 | 1,275 | 3,525 | 3,525 | 3,525 |
| $R^2$ | 0.816 | 0.770 | 0.789 | 0.919 | 0.910 | 0.914 |
| First Stage F Statistics | | 11.81 | 25.41 | | 11.07 | 23.81 |

*Note:* Dependent variable is tastes, estimated using unexplained regional variation in 1987-88 budget shares. Endowment $V_{gr}/\sum_{g'} V_{g'r}$ is proportion of region's cropland planted with crop $g$ over the 1970's. Means shown in appendix table 19. IV1 columns instrument endowment with 8 crop-specific rainfall and temperature variables and altitude, IV2 columns just use crop-specific rainfall, both using LIML. Regressions weighted by survey population weights. Robust standard errors clustered at region level. * significant at 10 percent, ** 5, *** 1.

## Internal Trade Liberalization with Habit Formation

**Step 1. Tastes and Relative Prices at Time T**

- Implication 4. Household tastes at the start of period T are biased towards the food for which a region has a relatively low price compared to the other region.

Replacing endowments with log price.

$$\theta_{gr} = \beta_2 \ln p_{gr} + d_g + \varepsilon_{gr}$$

# Internal Trade Liberalization with Habit Formation

Table 3: Tastes and Current Prices

| LHS: $\theta_{grt}$ | (1) Staples (87-88) | (2) All Foods (87-88) | (3) Staples (04-05) | (4) All Foods (04-05) |
|---|---|---|---|---|
| $\ln p_{gr}$ | -0.0261*** | -0.00711*** | -0.0248*** | -0.00821*** |
| | (0.00404) | (0.000914) | (0.00444) | (0.00110) |
| Good FE | Yes | Yes | Yes | Yes |
| Observations | 1,292 | 3,952 | 1,309 | 4,004 |
| $R^2$ | 0.436 | 0.881 | 0.576 | 0.935 |

*Note:* Dependent variable is tastes estimated using unexplained regional variation in 1987-88 or 2004-05 budget shares. Prices are weighted regional means of village median unit values. Regressions weighted by survey population weights. Robust standard errors clustered at region level. * significant at 10 percent, ** 5, *** 1.

## Internal Trade Liberalization with Habit Formation

**Step 1. Tastes and Relative Prices at Time T**

- Implication 4. Household tastes at the start of period T are biased towards the food for which a region has a relatively low price compared to the other region.

Replacing endowments with log price.

$$\theta_{gr} = \beta_2 \ln p_{gr} + d_g + \varepsilon_{gr}$$

# Internal Trade Liberalization with Habit Formation

Table 3: Tastes and Current Prices

|  | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| LHS: $\theta_{grt}$ | Staples (87-88) | All Foods (87-88) | Staples (04-05) | All Foods (04-05) |
| $\ln p_{gr}$ | -0.0261*** | -0.00711*** | -0.0248*** | -0.00821*** |
|  | (0.00404) | (0.000914) | (0.00444) | (0.00110) |
| Good FE | Yes | Yes | Yes | Yes |
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*Note:* Dependent variable is tastes estimated using unexplained regional variation in 1987-88 or 2004-05 budget shares. Prices are weighted regional means of village median unit values. Regressions weighted by survey population weights. Robust standard errors clustered at region level. * significant at 10 percent, ** 5, *** 1.

## Internal Trade Liberalization with Habit Formation

**Step 2. The Relationship between Caloric Intake, Tastes and Price Changes**

- The caloric responses to the (not trade-induced) price changes that occurred between 1987-88 and 2004-05.

$$\Delta \ln K_r = \underbrace{b_1 \sum_g (\theta_{gr} - \bar{\theta}_g) \Delta \ln p_{gr}}_{\text{Regional Tastes Wealth Effect}} + \underbrace{b_2 \sum_g (\bar{\theta}_g + z_g(.,.,.)) \Delta \ln p_{gr} + b_3 \sum_g (J_{gr} - \overline{J}_r) \Delta \ln p_{gr}}_{\text{Standard Wealth Effect}}$$
$$+ \underbrace{b_4 \Delta \ln food_r}_{\text{Factor Income Effect}} + \underbrace{b_5 \sum_g s_{gr} J_{gr} \Delta \ln s_{gr}}_{\text{Reallocation Effect}} + b_0 + \varepsilon_r. \quad (8)$$

# Internal Trade Liberalization with Habit Formation

Table 4: Caloric Change and the Correlation of Tastes with Temporal Price Changes

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| LHS: $\Delta \ln K_r$ | Staple Foods | All Foods | Landless Laborers, Staples | |
| (1987-88 to 2004-05) | Full Sample | Full Sample | Full Sample | <2000 Cal. |
| $\sum_g (\theta_{gr} - \bar{\theta}_g) \Delta \ln p_{gr}$ | -0.902*** | -0.866*** | -0.847*** | -0.661*** |
| | (0.0652) | (0.106) | (0.0670) | (0.0813) |
| $\sum_g (\bar{\theta}_g + z_g(.,.,.)) \Delta \ln p_{gr}$ | -0.841*** | -0.730*** | -0.816*** | -0.682*** |
| | (0.0515) | (0.0912) | (0.0591) | (0.0782) |
| $\sum_g (J_{gr} - \bar{J}_r) \Delta \ln p_{gr}$ | 0.00480 | 0.00395*** | 0.00712* | 0.00493 |
| | (0.00332) | (0.00112) | (0.00380) | (0.00311) |
| $\Delta \ln food_r$ | 0.820*** | 0.777*** | 0.800*** | 0.664*** |
| | (0.0428) | (0.0536) | (0.0376) | (0.0638) |
| $\sum_g s_{gr} J_{gr} \Delta \ln s_{gr}$ | 0.0627 | 0.120** | 0.0824** | 0.0108 |
| | (0.0391) | (0.0469) | (0.0396) | (0.0342) |
| Constant | -0.00448 | -0.160** | -0.00272 | 0.0106 |
| | (0.0378) | (0.0762) | (0.0470) | (0.0888) |
| Observations | 76 | 76 | 76 | 76 |
| $R^2$ | 0.902 | 0.781 | 0.869 | 0.577 |

*Note:* Dependent variable is the regional average log change in caloric intake per person between 1987-88 and 2004-05. Independent variables come from linearizing caloric intake. Regressions weighted by 1987-88 survey weights. Robust standard errors. * significant at 10 percent, ** 5, *** 1. Columns 3 and 4 include only landless labor households and landless labor households consuming fewer than 2000 calories per person per day.

## Internal Trade Liberalization with Habit Formation

**Step 3. Simulating Trade Liberalization with and without Habits**

- The Results of the last two subsections suggest that each region's favored foods will rise in relative price with trade liberalization
- The wealth effect will be more negative compared to a world where tastes are identical across regions.

**Counterfactual analysis**

- It is assumed that liberalization would equalize 2004-05 prices across regions.
- Price changes, elasticities from regression 8, and values of $\Delta s_{gr}$ (calculated using AIDS parameter estimates) are used to predict $\Delta \ln K_r$ under habit formation.
- In the "no habits" case, taste coefficients $(\theta_{gr})$ are set to be identical across regions, equal to the Indian weighted mean taste for each good.

# Internal Trade Liberalization with Habit Formation

Table 5: Predicted Impact of Internal Trade Liberalization With and Without Habit Formation

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| All-India | No Habits | Habits | | Regional Tastes − Identical Tastes | | | |
| Predicted Mean | Identical | Regional | Difference | All | Landless | Landless | Regional |
| (Staple Foods) | Tastes | Tastes | (2)−(1) | Foods | Labor | <2000 Cal | $z_{gr}(.,.,.)$ |
| Regional Tastes | 0 | -0.060*** | -0.060*** | -0.045*** | -0.057*** | -0.045*** | -0.16*** |
| Wealth Effect | (0) | (0.010) | (0.010) | (0.005) | (0.009) | (0.007) | (0.042) |
| Standard | -0.008 | -0.009 | -0.0005* | 0.000 | -0.002*** | -0.001** | 0.089** |
| Wealth Effect | (0.017) | (0.017) | (0.0003) | (0.000) | (0.001) | (0.000) | (0.043) |
| Reallocation | -0.008*** | -0.003*** | 0.005*** | 0.013*** | 0.007*** | 0.001*** | 0.0016 |
| Effect | (0.0013) | (0.0006) | (0.0012) | (0.002) | (0.002) | (0.000) | (0.0029) |
| Total Effect | -0.017 | -0.072*** | -0.055*** | -0.032*** | -0.052*** | -0.046*** | -0.065*** |
| $(\widehat{\Delta \ln K_r})$ | (0.016) | (0.014) | (0.0099) | (0.006) | (0.009) | (0.008) | (0.015) |

*Note:* 77 observations weighted by a region's total survey weight. First three rows show the components of the predicted mean log change in calories holding food expenditure constant if 2004-2005 regional prices are equalized. Predicted means use coefficients from equation 8 and predicted values of $s_{gr}$, $\Delta s_{gr}$ and $\bar{p}_r/p_{gr}$ from the AIDS (section 3.3). Column 1 sets regional tastes equal to Indian average taste for each food. Column 2 uses regional taste estimates. Column 3 displays the difference between columns 1 and 2. Columns 4-7 display the difference between regional and identical taste estimates for three alternative samples, and allowing the AIDS price and income coefficients to vary by region. Robust standard errors for means. * significant at 10 percent, ** 5, *** 1.

## Conclusion

- Model Overview
  - The paper presents a general equilibrium model incorporating inter-generational habit formation in consumption and regional agro-climatic endowment differences.
  - Over generations, household tastes evolve to favor crops best suited to local agro-climatic conditions.
- Empirical Evidence
  Provides evidence of habit formation in food consumption and documents regional taste patterns within India.

## Contribution

- For the past
    - Introduction of Habit Formation in Demand Models.
    - Policy Implications for Trade Liberalization
    - Empirical Evidence on Comparative Advantage and H-O model
- For the future
    - Migration
    - Habit Formation in other comsuption
    - Open to international trade
    - Other countries

## Strength

- Focus on Habit Formation and Trade: The paper examines how habit formation in food preferences impacts the caloric and welfare gains from trade liberalization, particularly in an Indian context.
- Empirical Framework: Uses a demand system model incorporating habit formation to analyze the relationship between regional tastes, prices, and historical agro-climatic endowments.
- Data and Methods: Utilizes household survey data from India (covering 1987-88 and 2004-05) to estimate regional tastes and assess how these tastes interact with price changes due to trade.
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## Weakness

- Complexity of Assumptions and Model
- Data Limitations
- Potential Omitted Variable Bias