

FOOD AID DISTRIBUTIONAL PATTERNS

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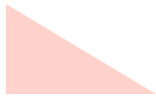
University of Virginia

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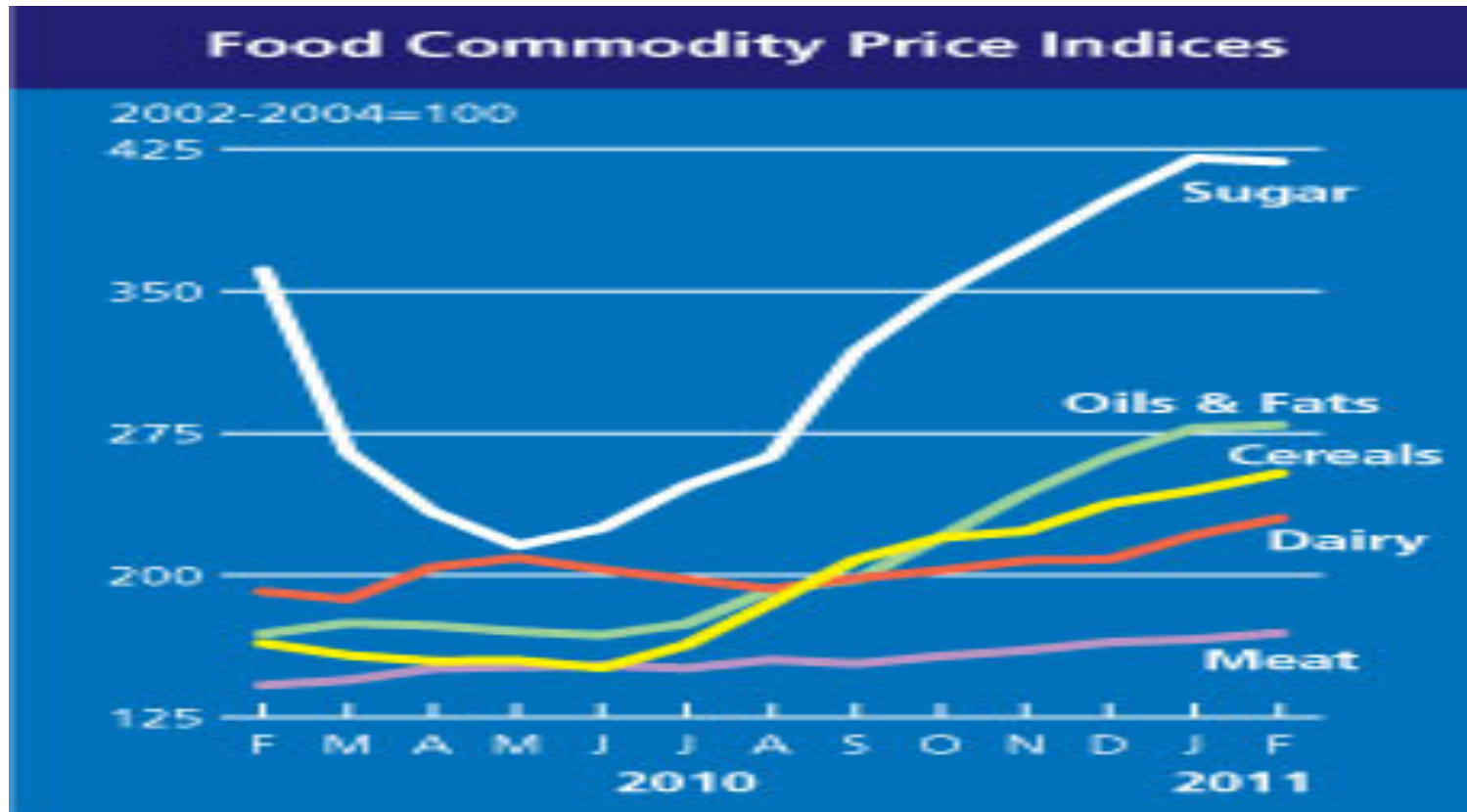
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ÉCONOMIE AGROALIMENTAIRE



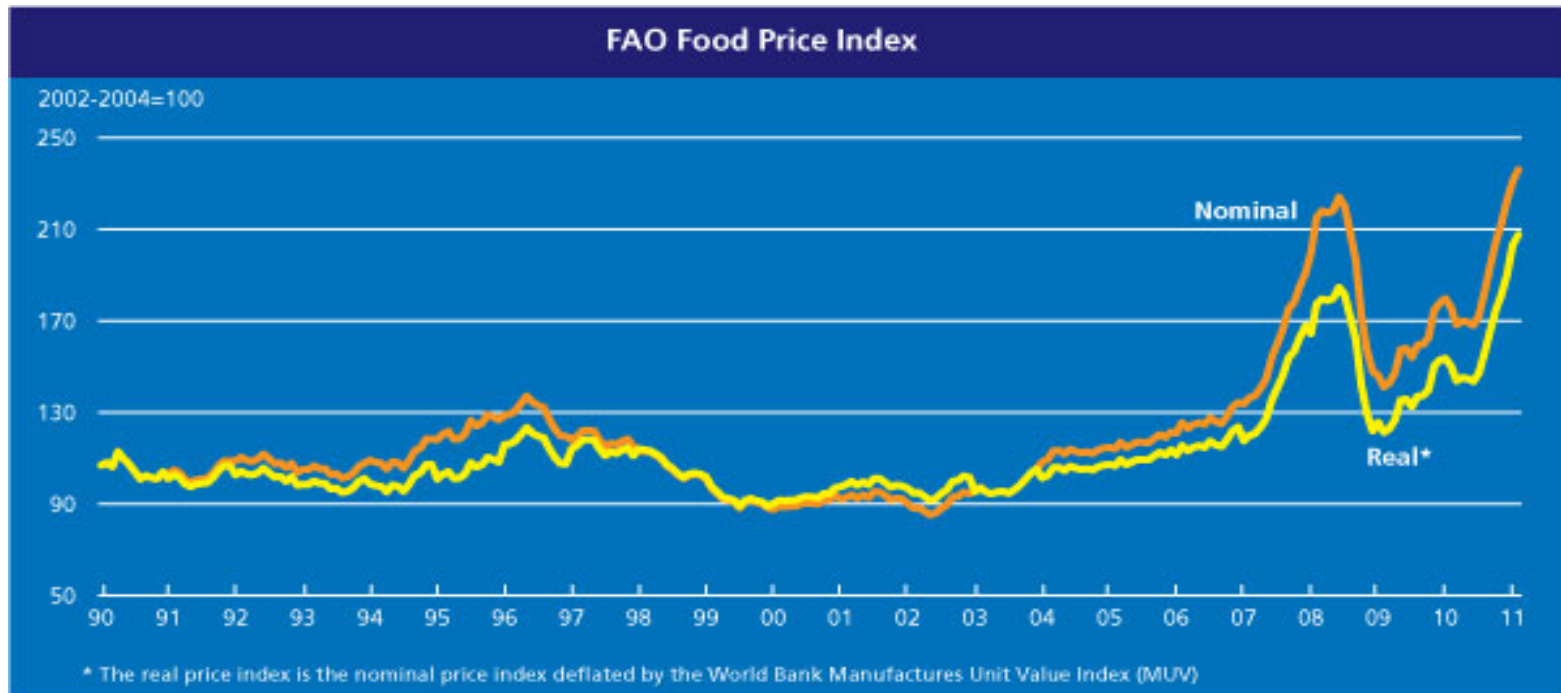
Empirical Context

- Export prices of major grains are up at least 70% from February last year.(FAO)



Empirical Context

- The **FAO Food Price Index (FFPI)** rose for the eighth consecutive month, averaging 236 points in February 2011, up 2.2 percent from January and the highest (in both real and nominal terms) since January 1990, the inception date of the index.



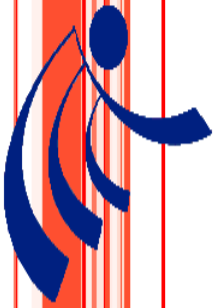
Causes

Increased consumer demand in emerging countries (India, China etc.)

Rising energy costs

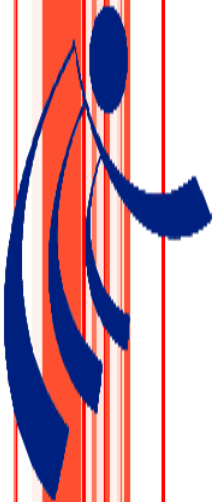
Lower crop yields due to weather conditions (Floods in Australia etc.)

Biofuel production (esp. corn)



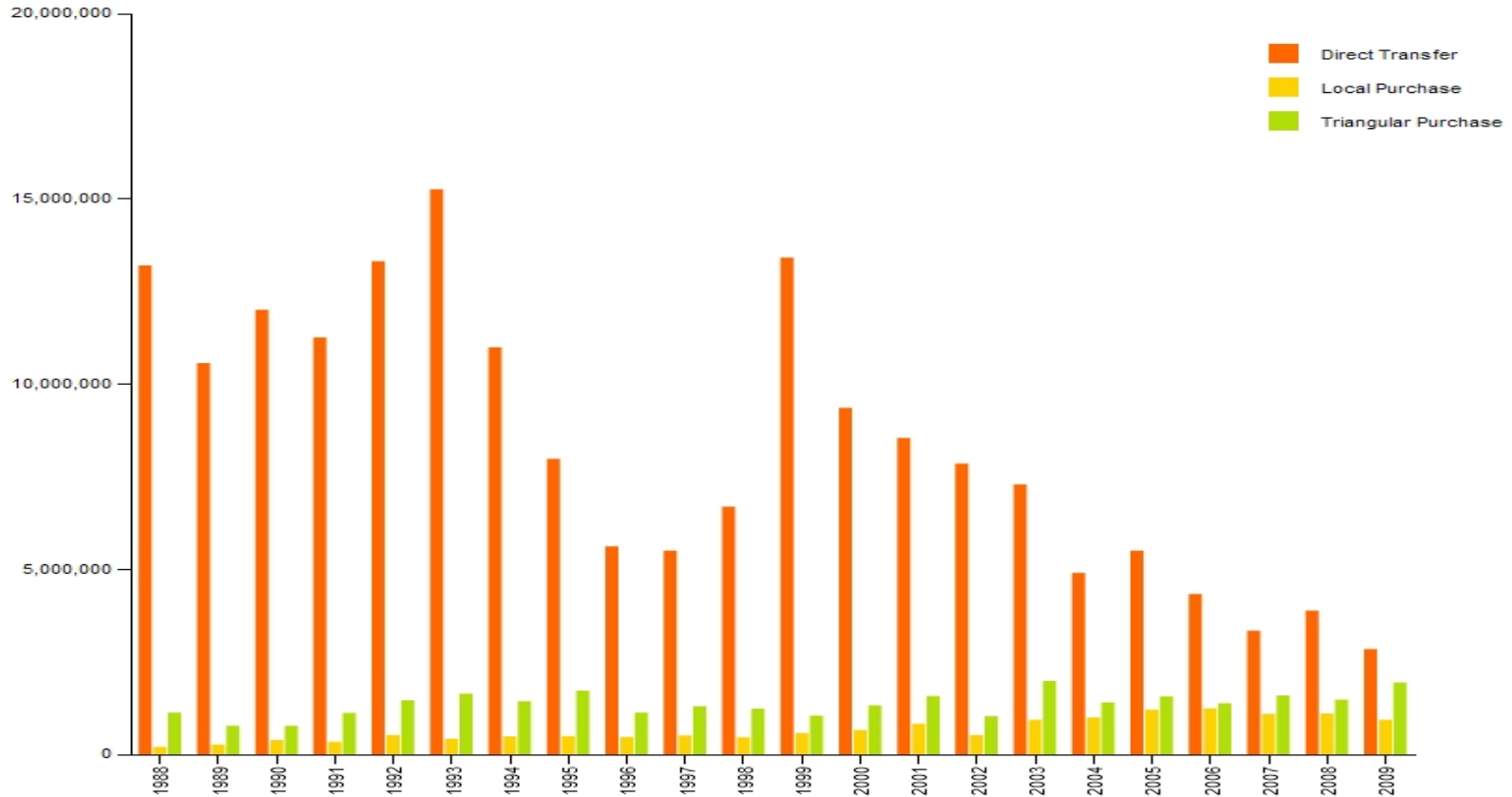
Consequences

- Impoverishment in developing countries, especially in cities.
 - 1 billion people survive on less than \$1 a day
 - Larger share of income on basic food commodities
- Food aid becomes a political issue
 - Haiti
 - 2% of total aid, but likely to increase?
 - Food aid as a foreign policy tool to incite democratization?
- Market incentives
 - Agricultural surpluses and protectionism (Eg. US Farm Bill)



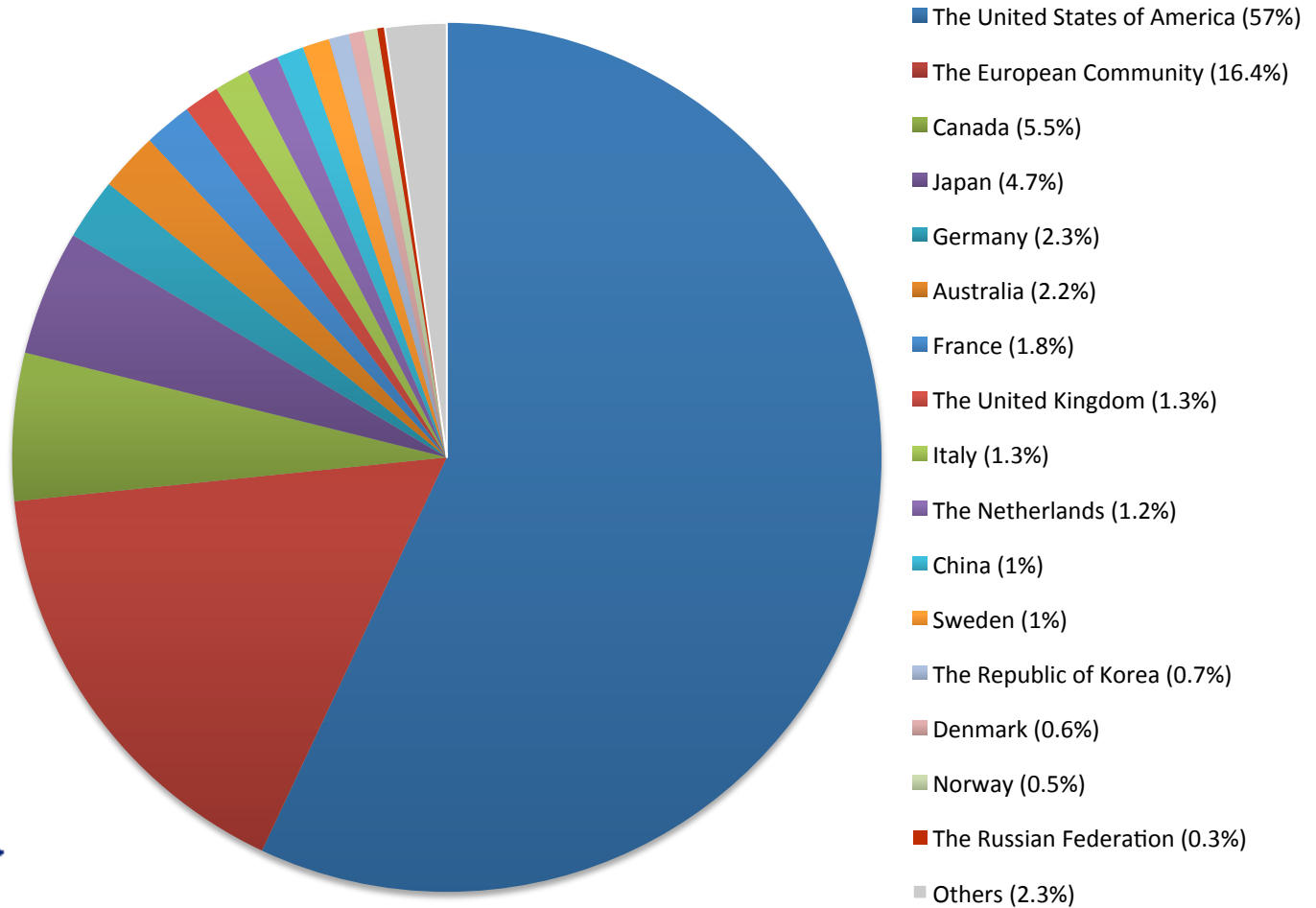
Total Food Aid (Grain equivalent, metric tons)

Quantities Delivered - 2D Source: World Food Programme



Large variance: 5.7m to 17.3m tons

Distribution of Food Aid Flow by Donor



Scientific Context

- Determinants of Food Aid
 - Needs
 - Economic interests of donors
 - Political interests of donors
 - Good governance
- Most studies consider the distribution patterns of a single donor to various recipient countries
 - Mainly the United States' distribution patterns
- Methodological Debate
 - Heteroskedasticity
 - The high number of zeros
 - Solution: Random-effects negative binomial (RENB) regression estimator



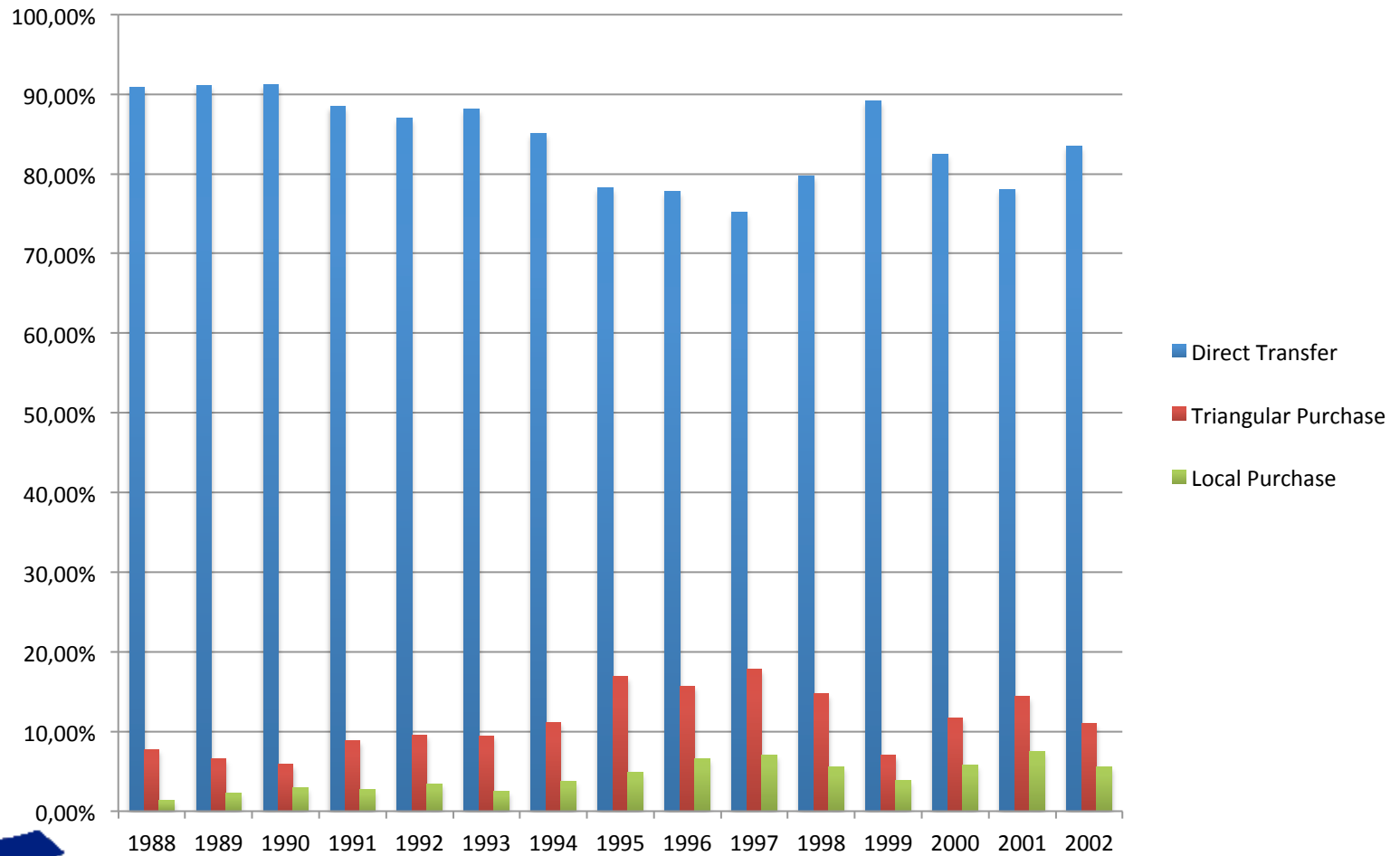
Research Questions and Data

- *What are the factors conditioning the volume of food aid sent to potential recipient countries?*
- *Do their influence vary across food aid delivery modes?*
- *Data*
 - The group variable is the donor-recipient pair
 - 1877 groups for which we have 15 years of data (1988-2002)
 - Because of missing observations, we have a total of 26037 observations
- *Dependent Variable*
 - Amount of food aid sent by a donor country i and received by the recipient country j calculated in thousand-ton grain equivalents

Food Aid Delivery Modes

- **A direct transfer** entails that the aid is sent directly from the donor to the recipient.
- **A triangular purchase represents** a transaction by which a donor provides commodities purchased in a third country as food aid to a final recipient country.
-
- **Local purchases** are transactions by which food aid is purchased and distributed in the recipient country.

Food Aid by Delivery Mode



A Gravity Framework

- Distance and transport issues matter to providers and recipients.
- To the extent that some food aid is seen as an instrument to boost future trade flows, distance should matter.
- Distance captures more than just transport costs (Huang, 2007).



Factors conditioning Food Aid Flows

– Gravity Model

- *H1: Donor countries provide more direct transfers (and less triangular transactions) of food aid to countries that are geographically closer to them.*
- *H2: Donor countries provide more food aid to more populous countries.*

– Needs

- *H3: Donor countries provide more food aid to countries with larger needs.*

– Good Governance

- *H4: Donor countries provide higher volumes of food aid to recipient countries with better respect for civil liberties and political rights.*



Factors conditioning Food Aid Flows

– Economic Interests of Donors

- *H5: Donor countries provide higher volume of food aid to developing countries with which they have larger volumes of trade.*
- *H6: For direct transfers only, the volume food aid is associated with agricultural surpluses in donor countries.*
- *H7: Donor countries provide higher volume of food aid to countries with less liberalized economies.*

– Political interests of Donors

- H8: Donor countries provide more food aid to countries with which they maintain close political ties



Anticipated Results

Some General Considerations

- Different delivery modes should induce different aid patterns.
 - *Donors may be more sensitive to some criteria (Eg. Governance issues) when buying food abroad.*
 - *Gravity effects vary according to delivery mode.*
 - *Donors domestic issues more salient for direct transfers.*
 - *Commercial incentives are not the same for direct transfers (think “food addictions”) as they are for triangular and local purchases.*
- We should therefore expect different results for total and each type of delivery mode.



Results: Gravity Effects

VARIABLES	TOTAL AID	DIRECT TRANSFERS	TRIANGULAR PURCHASE	LOCAL PURCHASE
DISTANCE (+ -)	-.1008323*** (.0288051)	-.1326959*** (.0337052)	.0979339* (.0529062)	-.2781227*** (.0661557)
POPULATION (RECIPIENT) (+)	-.0997888*** (.0119348)	-.1847256*** (.0143666)	-.1136271*** (.0206069)	.1879101*** (.0255937)

Natural log for our independent variables. RENB reg. Expected sign indicated between parentheses. $P > |z|$.05*, .01**, .001***

•Distance

- As expected: 1) Total aid flows are larger when donors and recipients are geographically closer; 2) Same goes for direct transfers (Transportation costs matter); 3) Donors turn increasingly to Triangular purchase as distance increases.
- Unexpected: Local purchase decreases with distance (We expected no effect). It does confirm Huang's unfamiliarity Ho.

•Population

- As expected, more local purchase in populous recipient countries, but not for total aid and other delivery modes. Why? Local suppliers are easier to find in more populous countries and large countries are more likely to cater their own needs, especially when disaster strikes.

Results: Recipient Needs

VARIABLES	TOTAL AID	DIRECT TRANSFERS	TRIANGULAR PURCHASE	LOCAL PURCHASE
CALORIES (-)	-1.228997*** (.1158791)	-.8515891*** (.1365039)	-2.128266*** (.2007115)	--1.824615*** (.236354)
GDP PER CAPITA (-)	-.5916511*** (.0222713)	-.4733738*** (.0263222)	-.6417372*** (.0382617)	-.7222754*** (.0456084)

Natural log for our independent variables. RENB reg. Expected sign indicated between parentheses. $P > |z|$.05*, .01**, .001***

Encouraging results. Support our Ho that contributors pay great attention to recipient needs, regardless of delivery modes used.

Results: Donor Political Interests

VARIABLES	TOTAL AID	DIRECT TRANSFERS	TRIANGULAR PURCHASE	LOCAL PURCHASE
UN VOTE SIMILARITY (+)	-.894325*** (.080365)	-1.086962*** (.0836546)	1.077597*** (.2082101)	.179047 (.2327684)

Natural log for our independent variables. RENB reg. Expected sign indicated between parentheses. $P > |z|$.05*, .01**, .001***

Neumayer (2005): Affinities between donor and recipient countries are a strong indicator of food aid distribution. Does it hold for any type of delivery mode ?
 Yes, for triangular and local purchases.
 No, for total aid and direct transfers.

Why? 1) Total aid results probably driven by direct transfers; 2) Direct aid can be used to mend fences with political opponents (Eg. “Great Grain Robbery” of the ‘70s), which isn’t necessary for “friendly” countries; 3); Triangular and local purchase helps the economic development of allies.

Results: Donor Economic Interests

VARIABLES	TOTAL AID	DIRECT TRANSFERS	TRIANGULAR PURCHASE	LOCAL PURCHASE
TRADE (X+M DYADS) (+)	.1350628*** (.0073426)	.1601429*** (.0087635)	.2087168*** (.0130582)	.1018676*** (.0147196)
GDP PER CAPITA (DONOR) (+ -)	.7464955*** (.0427668)	.3865318*** (.0466876)	1.506075*** (.1284337)	.9361001*** (.0996787)
GRAIN PRODUCT. PER CAPITA (DON.) (+-)	.058475*** (.0144894)	.3982479*** (.0194785)	-.374278*** (.023535)	-.1009172*** (.0996787)
TR. OPEN. (REC) (X+M/GDP) (+ -)	-.1000981*** (.0253579)	-.2415442*** (.0313696)	-.0107589 (.0420779)	.2271301*** (.0526671)

Natural log for our independent variables. RENB reg. Expected sign indicated between parentheses. $P > |z|$.05*, .01**, .001***

As expected: 1) Aid follows trade; 2) aid is a tool to redistribute agricultural surpluses: Positive relationship between GDP and grain production with total aid and direct transfers; negative relationship between grain production, and triangular and local purchase; 3) countries are more likely to use aid for trade with less integrated markets (trade openness), as suggested by results for direct transfers and triangular purchase (in corollary, as expected, local purchase increases with open economies) .

Not as expected: 1) GDP positively related with triangular and local purchase. Explanation: better means to buy foodstuffs abroad.

Results: Governance

VARIABLES	TOTAL AID	DIRECT TRANSFERS	TRIANGULAR PURCHASE	LOCAL PURCHASE
CIVIL LIB. + POL. RIGHTS (-)	.1414132*** (.0353624)	.269246*** (.041618)	.5503859*** (.0670686)	-.3690544*** (.0729488)

Natural log for our independent variables. RENB reg. Expected sign indicated between parentheses. $P > |z| .05^*$, $.01^{**}$, $.001^{***}$

Confirmation of Fariss (2010) Ho that donors give more food aid to countries with bad records of democratic values, since they may be forbidden to send other forms of aid.

But our results present a more balanced view:

- 1) We support Fariss' view for total aid, direct transfers and triangular purchase
- 2) But local purchase of food aid is more likely to flow to countries with good governance records.

This is good news: Governments use discernment when allocating food aid.

Help population in need with direct transfers and triangular purchase, but don't support "bad" governments via local purchase.

Other explanation: Difficult to find food supply chain in countries with poor human rights records.

Conclusion

- After econometric correction, previous results for total aid largely confirmed.
- Gravity Generally Matters.
- Delivery Modes Matters.
- Donors Sensitive to Recipients' Needs.
... but also to their own needs.

Explaining food aid allocation is a complex task, but we believe that we provide a better understanding of this phenomenon.



Additional slides

Results

Variables	1 st stage (xtprobit)	2 nd stage (xtnbreg)
CALOR (-)	-.0007889*** (.0000709)	-.000357*** (.0000446)
GDPCAP (-)	-.0004422*** (.0000234)	-.0005605*** (.0000201)
TRADE (+)	-6.42e-06* (3.34e-06)	-5.41e-06** (2.15e-06)
OPENK (+)	-.0007319* (.0004326)	-.0010648*** (.0003567)
DEMOC (-)	.0149121** (.0060797)	-.0100739** (.0043068)
UNVOTE (+)	-.8270047*** (.0911469)	-1.09829*** (.0475074)
LNDIST (-)	-.1618228*** (.0524017)	-.2675879*** (.0263041)
LNPOP (+)	.0917964*** (.0189218)	.0243294** (.0098096)
WALD CHI2	1001.76	2036.98



Food Aid (without USA and EC)

Variables	1 st stage Xtprobit Without USA and EC	2 nd stage Xtnbreg Without USA and EC
CALOR (-)	-.0008693*** (.0000805)	-.0002582*** (.0000521)
GDPCAP (-)	-.0002124*** (.000019)	-.0005758*** (.0000247)
TRADE (+)	-.0000127 (9.81e-06)	-.0000247*** (7.99e-06)
OPENK (+)	-.000287 (.0004865)	-.0007826* (.000404)
DEMOC (-)	.0171317** (.0067452)	.0083125* (.0049982)
UNVOTE (+)	-.3084472** (.144238)	.0248825 (.1098871)
LNDIST (-)	-.2520002*** (.0628133)	-.2330622*** (.0302615)
LNPOP (+)	.0978504*** (.0230848)	.055161*** (.0116927)
WALD CHI2	477.05	1194.06

