Motivation
Objective and Research Question
Overview of gains from trade in Old Trade Models
Overview of gains from trade in New Trade Models
New Trade Models, Same Old Gains
Empirics

GAINS FROM TRADE IN NEW TRADE MODELS

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Agenda

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Motivation

- Samuelson (1939);there are gains from trade, consequently one of the most fundamental questions in economics is how best to measure these gains.
- Arkolakis, Costinot, and Rodriguez-Clare (2012) commoly denoted as ACRC, has shown that a broad class of quantitative trade models have yield same trade gains.
- ACRC argue that new trade models yield the same trade gains as in old trade models.
- ACRC has come under scrutiny and serious criticisms in recent international trade literature.
- Contrasting thoughts: different models have different elasticities hence different trade gains, consequently the ACRC may over(under) estimate gains.

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Objective and Research Question

Objective

To survey recent body of theoretical work that aims to study trade gains in new trade models

Research Question

How large are the gains from international trade and how has the development of new trade models changed our understanding of the gains from trade?

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Overview of gains from trade in Old Trade Models

- Traditional trade theory has concerned itself with these central questions: What determines the pattern of trade? What are the sources of gains from trade?

- Pattern of trade is based on comparative advantage.

- Countries will gain from trade provided the relative price under free trade diers from both countrys relative prices under autarky

- Concerned with inter-industry trade in a perfect competition setting

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Ricardo

Assumptions

2 countries,2 goods, 1 factor (labor) which is immobile across countries and mobile across sectors, CRS production, identical and homothetic preferences, perfect competition

- Takes cross-country technology differences as the basis of trade and it is often used to explore the principle of comparative advantage
- Free trade leads each country to completely specialize in their comparative advantage good and leaves everybody better off.
- Increased utility comes from increased consumption possibilities that allow consumers(workers) to attain a higher indifference curve.
- There is only one factor of production (labour), it implies that

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Hecksher Ohlin

Assumptions

2 countries, 2 sectors, 2 factors of production (e.g., capital and labour) perfectly mobile across sectors (but not across countries) and identical technologies across countries.

- The only difference between countries is their relative factor endowment, which allows them to use different combinations of those endowments
- Comparative advantage depends on countries relative endowment of factors of production.
- Countries tend to export goods whose production is intensive in factors with which they are abundantly endowed

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Summary

Theory of comparative advantage

when 2 countries specialize in producing a good in which they have a comparative advantage, both economies gain from trade, even if one country has an absolute advantage in both goods. In particular, each country will export the good for which they have a comparative advantage

- In Ricardo differences in technologies and relative prices across countries underpins the gains from trade.
- In H-O differences in factor endowments across countries underpins trade gains.
- Limitations:Explains inter-industry trade between countries with dierent endowments BUT does not explain intra-industry trade between countries with similar endowments

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Overview of gains from trade in New Trade Models

- New trade theory emphasises on intra-trade: similar countries specialise in differentiated goods(North-North Trade)

- Based on differentiated products and heterogenous preferences to explain intraindustry trade, monopolistic competition, increasing returns to scale

- There are three sources of gains from trade that are not present in traditional models
  1. Love of variety gains
  2. Allocative efficiency gains: self-selection of firms with only the most efficient firms surviving after trade liberalization
  3. Productive efficiency gains associated with trade-induced innovation

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Love of variety gains(Krugman)

Assumptions

1 factor of production (labor), 1 product, 2 countries countries
have identical technologies, factor endowments, preferences.
differentiated goods (number of firms equals the number of
varieties),large number of consumers with symmetric demand of all
available varieties - (more varieties lead to greater utility)
Increasing returns to scale) countries specialize in producing a
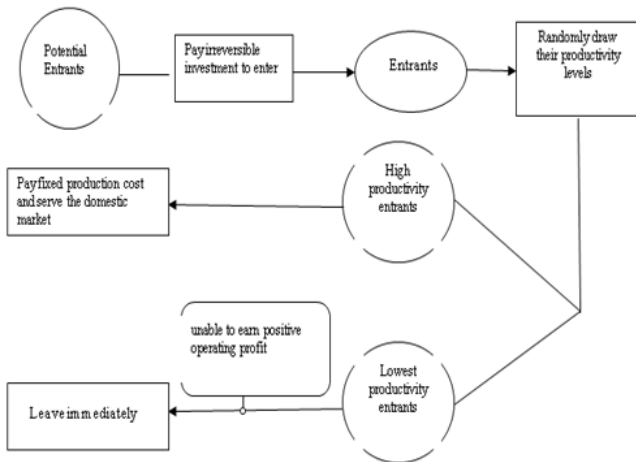subset of goods

- Consumers derive their gains from having access to new
  import varieties of differentiated products.
- Feenstra(1994) develops a methodology for measuring the
  impact of new varieties on an exact price index of a single
  imported good

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- Broda and Weinstein (2006) asserted that Feenstra s approach tends to generate a large number of elasticities that take on imaginary values, which are hard to interpret

- Broda and Weinstein (2006) solve the problem encountered by developing an aggregate import price index that allows for changes in varieties

- They show that the upward bias of the conventional import price index of 1.2% per year leads to a gain from imported variety of 2.6% of GDP over the whole period.

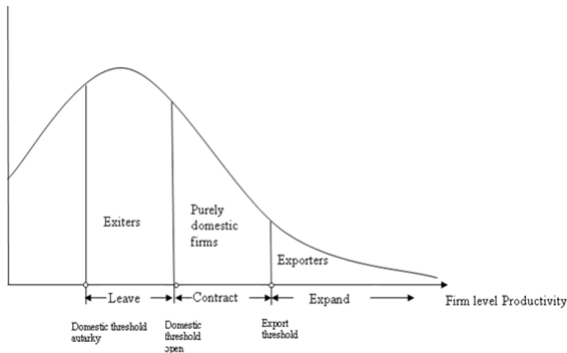- Opening up the economy to trade yields a gain derived from variety

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Allocative Effeciency gains (Melitz)

- Allocative efficiency gains are associated with shifting labor and capital out of small, less productive firms into large, more-productive firms
- Firms face uncertainties about their future productivity when making an irreversible costly investment decision to enter the domestic market
- The decision to export occurs after the firms observe their productivity.
- A firm enters export markets if the net profits generated from its exports in a given country are sufficient to cover the fixed exporting costs.
- The zero cutoff profit and free entry conditions in domestic and exporting markets define the productivity thresholds for firms entry into the domestic and exports markets.

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- Increased number of foreign exporters leads to increase variety of commodities to consumers hence resulting in trade gains.

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- combination of fixed export costs and variable export costs ensures that the exporting productivity threshold is higher than for the domestic market
- only a small fraction of firms with high productivity engage in exports markets.

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Productive effeciency gains

- Productive efficiency gains associated with trade-induced innovation
- Monopolistic competition model allows for gains from a reduction in firm markups due to import competition
- Melitz and Ottaviano (2008):larger markets exhibit tougher competition resulting in lower average mark-ups and higher aggregate productivity.
- Competitive effect: Trade increases competition between countries, therefore it increases the losses a firm would face, if it fails to innovate
- Scale effect: By enlarging the size of the market, international trade increases the profits of a firm. The anticipated gains may thus increase the incentive to innovate

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- ACRC;New trade models yield the same trade gains as old trade models via a single trade elasticity.
- Identify two important statistics in measurement of the gains (i) trade elasticity ϵ and (ii) share of spending on domestically produced goods λ
- These two parameter summarize the trade gains from trade in country
- The former because it reflects traded quantities in the current state of economy, and;
- The latter because it maps changes in quantities into changes in prices, which are what matters for gains
- Gravity equation models are used to demonstrate the trade gains result(Armington, Ricardo, and Melitz)

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Assumptions and Macro level Restrictions

ASSUMPTIONS:

- Dixit-Stiglitz preferences
- Technology and Trade Costs: labour is the only factor of production and is supplied inelastically at quantity L_i and wages w_i .
- Exporting from i to j involves iceberg trade costs $\tau_i j$
- Structure of product markets: perfect competition and monopolistic competition with either restricted or free entry

MACRO LEVEL RESTRICTIONS:

- Balanced Trade
- Aggregate profits are a constant share of aggregate revenue
- The import demand system is CES

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Results

Gravity models of trade	Summary of trade gains
Armington	
Ricardian	$d \ln W_j = \dfrac{d \ln \lambda_{jj}}{\varepsilon}$
Melitz	Can be represented as $GT_j = 1 - \lambda_{jj}^{1/\varepsilon}$

Summary of trade gains: Armington, Ricardo and Merlitz models

- This result from ACRC has become a subject of contetious debate
- Ossa (2012) has shown that this result depends on using the average elasticity of imports, and that when using industry specific elasticities, the gains from trade are substantially larger.

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- Zhang Levchenko (2012) shows that by ignoring the sectoral heterogeneity in productivity and hence in trade volumes the one-sector formula systematically understates the gains from trade by more than 2 thirds
- Siminovska and Waugh (2012): different models imply different trade elasticities and, hence, different welfare gains from trade.
- Nigai (2013):Predictions under ARC are likely to overstate the gains from trade for the poor and understate them for the rich
- finds out that these errors are as large as 8.6 and -6.6 percentage points for the poorest and the richest consumer, respectively

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Costinot and Rodriguez-Clare (2013), Trade Theory with Numbers: Quantifying the consequences of Globalisation.

Trade gains (G_j) Expressed in percentages computed using:							
One Sector (i)	Multiple Sectors, No Intermediates (iii)		Multiple Sectors with Intermediates				
		Perfect Comp.	Monopolistic Competition	Perfect Competition (data Alpha)	Perfect Comp.	Monopoly Comp. (Krugman)	Monopoly Comp. (Melitz)
Country	1	2	3	4	5	6	7
AUS	2.3	8.6	3.7	15.8	15.7	6.9	6.8
AUT	5.7	30.3	30.5	49.5	49.0	57.6	64.3
BEL	7.5	32.7	32.4	54.6	54.2	63.0	70.9
BRA	1.5	3.7	4.3	6.3	6.4	9.7	12.7
CAN	3.8	17.4	15.3	30.2	29.5	33.0	39.8
CHN	2.6	4.0	4.0	11.5	11.2	28.0	77.9
CZE	6.0	16.8	21.2	34.0	37.2	65.1	86.7
DEU	4.5	12.7	17.6	21.3	22.5	41.4	52.9
DNK	5.8	30.2	24.8	41.4	45.0	42.0	44.8
ESP	3.1	9.0	9.5	18.3	17.5	24.4	30.5
FIN	4.4	11.1	10.5	20.2	20.3	24.2	28.0
FRA	3.0	9.4	11.1	17.2	16.8	25.8	32.1
GBR	3.2	12.9	11.7	21.6	22.4	22.2	23.5
GRC	4.2	16.3	4.7	23.7	24.7	6.8	6.1
HUN	8.1	29.8	31.3	53.5	55.3	75.7	91.0
IDN	2.9	5.5	4.0	13.1	11.6	11.2	14.6
IND	2.4	4.6	4.3	9.2	8.6	9.5	11.7
IRL	8.0	23.5	14.2	37.1	38.9	28.1	29.1
ITA	2.9	8.7	9.2	16.4	16.2	21.7	26.5
JPN	1.7	1.4	3.7	4.6	3.5	20.7	32.7
KOR	4.3	3.9	8.6	12.5	11.4	44.1	70.2
MEX	3.3	11.1	13.1	18.4	18.6	24.3	28.4

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- Gains predicted by multi-sector models under both market structures, Columns 2 and 3, are signicantly larger than those predicted by one-sector models, Column 1

- The average among all the countries more than triples, increasing from 4.4% (Column 1) to 15.3% (Column 2), a point also emphasized in Ossa (2012).

- Predicted gains from trade are much higher than those predicted by the same models without intermediate goods.

- e.g gains from trade for the Czech Republic and Spain in Column 4 are twice as high as those in Column 2.

- Why?:Trade in intermediates is associated with a decrease in the price of domestic goods, which implies additional gains.If domestic goods are used as inputs in domestic production, this triggers additional rounds of productivity gains

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Ossa(2012), "Why Trade Matters After All"

		TABLE 1: Gains from trade					
	Unadjusted (β=0, γ=0)				Adjusted (β=0.188, γ=0.312)		
	True gain (%)	Naïve Gain (%)	Ratio		True gain (%)	Naïve gain (%)	Ratio
Argentina	39.7	4.8	8.2		22.3	2.9	7.8
Australia	73.1	9.1	8.0		39.2	5.4	7.2
Austria	145.7	16.2	9.0		71.9	9.5	7.6
Belgium	158.2	22.3	7.1		77.1	12.9	6.0
Brazil	21.7	3.2	6.7		12.6	1.9	6.5
Canada	96.3	12.9	7.5		50.2	7.6	6.6
Switzerland	135.1	14.3	9.4		67.4	8.4	8.0
Chile	49.8	7.6	6.6		27.6	4.5	6.1
China	152.6	8.6	17.8		74.8	5.1	14.7
Colombia	52.1	6.3	8.3		28.8	3.7	7.7
Czech Republic	193.4	18.1	10.7		91.3	10.5	8.7
Germany	86.9	10.0	8.7		45.8	5.9	7.7
Denmark	139.0	15.5	9.0		69.0	9.0	7.6
Spain	73.1	10.0	7.3		39.2	5.9	6.6

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Finland	99.6	10.0	9.9	51.7	5.9	8.7
France	104.6	12.9	8.1	54.0	7.6	7.1
UnitedKingdom	79.2	10.8	7.3	42.1	6.4	6.6
Greece	76.9	10.4	7.4	41	6.1	6.7
Crotia	98.9	13.1	7.5	51.3	7.7	6.6
Hungary	263.4	18.1	14.6	117.6	10.5	11.2
Indonesia	25.5	3.6	7.1	14.7	2.2	6.8
India	42.4	5.0	8.5	23.7	3.0	8.0
Ireland	133.5	14.0	9.5	99.7	3.0	8.1
Iran	54.3	8.3	6.6	29.9	8.2	6.1
Italy	60.1	7.9	7.6	32.8	4.9	7.0
Japan	13.4	2.3	5.8	7.9	4.7	5.7
Kazakhstan	71.7	11.3	6.4	3.5	1.4	5.8
Korea	70.7	7.1	9.9	38.0	6.6	9.0
Morocco	95.4	9.6	10.0	49.7	4.2	8.8
Mexico	117.2	10.1	11.6	59.6	5.7	10.0
Netherlands	188.9	19.8	9.5	89.5	6.0	7.8
Norway	78.5	11.3	6.9	41.8	11.5	6.3
New Zealand	55.9	8.5	6.6	30.7	6.7	6.7
Pakistan	57.6	6.1	9.4	31.5	5.0	8.7
Peru	41.1	5.2	7.8	23.1	3.6	7.4
Poland	123.0	13.3	9.2	62.1	3.1	7.9
Portugal	89.0	11.9	7.5	46.7	7.8	6.7
Rest of World	68.1	11.4	6.0	36.8	7.0	5.5
Russia	39.8	5.4	7.3	22.3	6.7	6.9
Saudi Arabia	75.4	9.8	7.7	40.3	3.2	7.0
Sin/Mal/Phi	144.8	13.6	10.6	71.5	5.8	8.9

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- The data used is from the UN-Comtrade database,the focus is on the worlds 49 largest economies and a residual Rest of the World in the year 2005

- Gains from trade of the US increase from 6.4% to 42.0% if I do not adjust for nontraded goods and intermediate goods and from 3.8% to 23.5% otherwise.

- The gains from trade of the UK increase from 10.8% to 79.2% if I do not adjust for nontraded goods and intermediate goods and from 6.4%to 42.1% otherwise.

- On average, the "true" gains from trade exceed the "naive" gains from trade by a factor of 8.5 if I do not adjust for nontraded goods and intermediate goods and by a factor of 7.5, otherwise

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- The key result obtained from this empirical study is that accounting for cross-industry variation in trade elasticities greatly magnifies the estimated gains from trade
- While imports in the average industry do not matter too much, imports in some industries are critical to the functioning of the economy.
- 10% most important industries account for more than 80%of the log gains from trade on average