Why Haven’t Global Markets Reduced Inequality?

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11th African Economic Conference
Abuja, Nigeria
December, 2016
• Enormous increase in globalization last 20 years
• Enormous increase in globalization last 20 years
  – more *trade* of goods/services between countries
• Enormous increase in globalization last 20 years
  – more *trade* of goods/services between countries
  – more *production* of goods/services across national boundaries
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  – more *trade* of goods/services between countries
  – more *production* of goods/services across national boundaries
• caused by
• Enormous increase in globalization last 20 years
  – more *trade* of goods/services between countries
  – more *production* of goods/services across national boundaries
• caused by
  – decline in transport costs
• Enormous increase in globalization last 20 years
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• caused by
  – decline in transport costs
  – decline in communication costs
• Enormous increase in globalization last 20 years
  – more *trade* of goods/services between countries
  – more *production* of goods/services across national boundaries

• caused by
  – decline in transport costs
  – decline in communication costs
  – removal of trade barriers
Globalization has promised
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• prosperity to emerging economies
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• prosperity to emerging economies
  – has often delivered: China and India
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- prosperity to emerging economies
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- to reduce gap between haves and have nots (inequality) in emerging economies
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- prosperity to emerging economies
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- to reduce gap between haves and have nots (inequality) in emerging economies
  - has not delivered
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• to reduce gap between haves and have nots (inequality) in emerging economies
  – has not delivered
• In fact, in many emerging economies, inequality has increased
Globalization has promised

- prosperity to emerging economies
  - has often delivered: China and India

- to reduce gap between haves and have nots (inequality) in emerging economies
  - has not delivered

- In fact, in many emerging economies, inequality has increased
  - including China and India
• Much in news about inequality
• Much in news about inequality
  – mostly about growing inequality in *rich* countries
• Much in news about inequality
  – mostly about growing inequality in rich countries

• My concern today is with increased inequality in emerging economies
• Much in news about inequality
  – mostly about growing inequality in *rich* countries

• My concern today is with increased inequality in *emerging* economies

• Why does reducing inequality there matter?
• Much in news about inequality
  – mostly about growing inequality in rich countries

• My concern today is with increased inequality in emerging economies

• Why does reducing inequality there matter?
  – egalitarian argument
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• My concern today is with increased inequality in emerging economies

• Why does reducing inequality there matter?
  – egalitarian argument
  – eradication of poverty
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  – mostly about growing inequality in *rich* countries

• My concern today is with increased inequality in *emerging* economies

• Why does reducing inequality there matter?
  – egalitarian argument
  – eradication of poverty
  – political stability
• Is rise in inequality in emerging economies surprising?
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• Yes -- contradicts *theory of comparative advantage*
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• Yes - - contradicts theory of comparative advantage
  – goes back 200 years (David Ricardo)
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  – goes back 200 years (David Ricardo)
  – has been impressively successful in explaining international trade patterns
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• Because that theory is so important, worth reviewing why it makes this prediction
Theory of comparative advantage asserts: important difference between countries is in their relative endowments of “factors of production” i.e., the inputs to production
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• Assume 2 factors: high-skill labor and low-skill labor
Compare rich country with emerging economy
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- *ratio* of high-skill to low-skill workers higher in rich country
Compare rich country with emerging economy

- *ratio* of high-skill to low-skill workers higher in rich country
- so, rich country has *comparative* advantage producing goods requiring high proportion of high-skill workers - - e.g., computer software
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- so, rich country has *comparative* advantage producing goods requiring high proportion of high-skill workers - - e.g., computer software
- emerging economy has comparative advantage producing goods where skill doesn’t matter so much - - e.g., rice
To see effect of globalization on production:
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• look at production patterns *before* globalization (no trade)
To see effect of globalization on production:

• look at production patterns *before* globalization (no trade)
• look at production *after* globalization
To see effect of globalization on production:

• look at production patterns *before* globalization (no trade)
• look at production *after* globalization
• compare the two
Before globalization (before trade)
Before globalization (before trade)

- companies in rich country produce *both* software and rice
  (both demanded by rich country consumers)
Before globalization (before trade)

- companies in rich country produce both software and rice

  (both demanded by rich country consumers)

- companies in emerging economy also produce both goods
Before globalization (before trade)

- companies in rich country produce *both* software and rice
  (both demanded by rich country consumers)
- companies in emerging economy also produce both goods
- emerging economy’s software production “inefficient”
Before globalization (before trade)

- companies in rich country produce *both* software and rice
  (both demanded by rich country consumers)
- companies in emerging economy also produce both goods
- emerging economy’s software production “inefficient”
  - emerging economy’s labor force better suited to rice
• low-skill workers in emerging economy *hurt* by that country’s software production
• low-skill workers in emerging economy *hurt* by that country’s software production
  – not needed much for software
• low-skill workers in emerging economy *hurt* by that country’s software production
  – not needed much for software
  – greatly needed for rice
• low-skill workers in emerging economy *hurt* by that country’s software production
  – not needed much for software
  – greatly needed for rice
  – if production diverted from rice to software, demand for low-skill labor *reduced*
• low-skill workers in emerging economy hurt by that country’s software production
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  – if production diverted from rice to software, demand for low-skill labor reduced
  – downward pressure on low-skill wages
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• similarly high-skill workers in emerging economy *benefit* from software production
• low-skill workers in emerging economy *hurt* by that country’s software production
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  – if production diverted from rice to software, demand for low-skill labor *reduced*
  – downward pressure on low-skill wages

• similarly high-skill workers in emerging economy *benefit* from software production
  – puts them in higher demand
Suppose door for trade between rich country and emerging economy opens
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- rich country will shift production from rice to software — will import rice from emerging economy
Suppose door for trade between rich country and emerging economy opens

- rich country will shift production from rice to software –– will import rice from emerging economy

- emerging economy will shift production from software to rice –– will import software from rich country
So, emerging economy now produces *more* rice and *less* software than before
So, emerging economy now produces *more* rice and *less* software than before

- raises demand for low-skill workers
So, emerging economy now produces *more* rice and *less* software than before

• raises demand for low-skill workers
  – rice uses low-skill workers more intensively than does software
So, emerging economy now produces *more* rice and *less* software than before

- raises demand for low-skill workers
  - rice uses low-skill workers more intensively than does software
- reduces demand for high-skill workers
So, emerging economy now produces *more* rice and *less* software than before

- raises demand for low-skill workers
  - rice uses low-skill workers more intensively than does software
- reduces demand for high-skill workers
- so, low-skill wages *rise* and high-skill wages *fall*
Theory of comparative advantage remarkably successful historically
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- in second half of 19\textsuperscript{th} century
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  - Europe - - relative abundance of low-skill labor
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  – Europe - - relative abundance of low-skill labor
  – U.S. - - relative abundance of high-skill labor
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• trade between U.S. and Europe increased dramatically
Theory of comparative advantage remarkably successful historically

- in second half of 19th century
  - Europe - - relative abundance of low-skill labor
  - U.S. - - relative abundance of high-skill labor
- trade between U.S. and Europe increased dramatically
- inequality fell in Europe (and rose in U.S.)
But theory less successful for recent globalization
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(1) predicts that greater differences in skill ratios between countries imply more trade between them
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(2) predicts decrease in inequality in emerging economies
But theory less successful for recent globalization

(1) predicts that greater differences in skill ratios between countries imply more trade between them
   – but, relatively little trade between rich industrialized nations and very poorest countries (e.g., Malawi)

(2) predicts decrease in inequality in emerging economies
   this has not generally happened
Alternative theory (in collaboration with M. Kremer)
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• globalization = international *production*
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  - computers
designed in U.S.
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• *many* skill levels (not just 2)
Alternative theory (in collaboration with M. Kremer)

• globalization = international production
  – computers
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• many skill levels (not just 2)
  – today: 4 levels
Two countries -- one rich, one emerging
Two countries - - one rich, one emerging

- rich country
Two countries - - one rich, one emerging

• rich country
  – workers of skill levels $A$ and $B$
Two countries - - one rich, one emerging

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  – workers of skill levels $A$ and $B$
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Two countries - - one rich, one emerging

• rich country
  – workers of skill levels A and B

• emerging country
  – workers of skill levels C and D
Two countries - - one rich, one emerging

• rich country
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• $A > B > C > D$
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  (argument still holds if $C > B$ )
Two countries - - one rich, one emerging

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• emerging country
  – workers of skill levels $C$ and $D$

• $A > B > C > D$

  (argument still holds if $C > B$ )

• wages will depend on how workers of different skill levels “matched” together to produce output
• production process consists of different *tasks*
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  – “managerial” task - - sensitive to skill level
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  – “managerial” task - - sensitive to skill level
  – “subordinate” task - - less sensitive to skill
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• output produced by “matching” managers and subordinates
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\[
\text{Output} = M^2 S
\]
• production process consists of different tasks
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\[ \text{Output} = M^2S \]

\[ M = \text{skill-level of manager} \]
• production process consists of different \textit{tasks}
  \begin{itemize}
    \item “managerial” task -- sensitive to skill level
    \item “subordinate” task -- less sensitive to skill
  \end{itemize}

• output produced by “matching” managers and subordinates

• amount of output depends on skill levels:

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\text{Output} = M^2 S
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M = \text{skill-level of manager}
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\[
S = \text{skill-level of subordinate}
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if \( M = 4 \) \( S = 3 \), output = \( 4 \times 4 \times 3 = 48 \)
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if \( M = 4\)  \( S = 3\), output = \(4 \times 4 \times 3 = 48\)

• many producers compete to hire workers
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if \( M = 4 \) \( S = 3 \), output = \( 4 \times 4 \times 3 = 48 \)

• many producers compete to hire workers
  – ensures that matching is efficient
  – ensures that workers paid according to productivity
• Different ways workers could be matched
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• Assume two 3-workers and two 4-workers
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• Assume two 3-workers and two 4-workers

  – 3s could be matched with 4s (cross-matching):

    \[ \text{total output} = \left( 4^2 \times 3 \right) + \left( 4^2 \times 3 \right) = 96 \]
Different ways workers could be matched

Assume two 3-workers and two 4-workers

- 3s could be matched with 4s (cross-matching):

\[
\text{total output} = (4^2 \times 3) + (4^2 \times 3) = 96
\]

- or 3 could be matched with 3, and 4 with 4 (homogeneous-matching):

\[
\text{total output} = (3^2 \times 3) + (4^2 \times 4) = 91
\]
• Different ways workers could be matched

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  – or 3 could be matched with 3, and 4 with 4 (homogeneous-matching):
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  – competition ensures matching pattern maximizes output
• Different ways workers could be matched

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  – 3s could be matched with 4s (cross-matching):

    \[
    \text{total output} = \left(4^2 \times 3\right) + \left(4^2 \times 3\right) = 96
    \]

    \[
    \begin{array}{c}
    4 \\
    3
    \end{array}
    \]

  – or 3 could be matched with 3, and 4 with 4 (homogeneous-matching):

    \[
    \text{total output} = \left(3^2 \times 3\right) + \left(4^2 \times 4\right) = 91
    \]

    \[
    \begin{array}{c}
    4 \\
    3
    \end{array}
    \]

  – competition ensures matching pattern maximizes output

  – so, in this case, we expect \textit{cross-matching}
• Suppose instead two 2-workers and two 4-workers
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  – 2 s could be matched with 4 s (cross-matching):
• Suppose instead two 2-workers and two 4-workers

- 2 s could be matched with 4 s (cross-matching):

\[
\text{total output} = (4^2 \times 2) + (4^2 \times 2) = 64
\]
• Suppose instead two 2-workers and two 4-workers
  
  – 2 s could be matched with 4 s (cross-matching):
    
    \[
    \text{total output} = (4^2 \times 2) + (4^2 \times 2) = 64
    \]
    
    – or could have homogeneous-matching
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    \text{total output} = (4^2 \times 2) + (4^2 \times 2) = 64
    \]

  – or could have homogeneous-matching

    \[
    \text{total output} = (4^2 \times 4) + (2^2 \times 2) = 72
    \]
• Suppose instead two 2-workers and two 4-workers

  – 2 s could be matched with 4 s (cross-matching):
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    \text{total output} = (4^2 \times 2) + (4^2 \times 2) = 64
    \]

  – or could have homogeneous-matching
    \[
    \text{total output} = (4^2 \times 4) + (2^2 \times 4) = 72
    \]

  – here expect homogeneous-matching
• because two tasks (managerial, subordinate) 
  differentially sensitive to skill, argument for cross-matching
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*differentially* sensitive to skill, argument for *cross-matching*

– higher skill in managerial position
because two tasks (managerial, subordinate) 
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matching
  – higher skill in managerial position
  – lower skill in subordinate position
• because two tasks (managerial, subordinate) differentially sensitive to skill, argument for cross-matching
  – higher skill in managerial position
  – lower skill in subordinate position

• But if skill levels too different, then homogeneous-matching better
• because two tasks (managerial, subordinate) differentially sensitive to skill, argument for cross-matching
  – higher skill in managerial position
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• But if skill levels too different, then homogeneous-matching better
  – tasks are complementary
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  – tasks are complementary
  – even very high-skill manager has low productivity if matched with very low-skill subordinate
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• Matching pattern that arises strikes balance between these two forces
• because two tasks (managerial, subordinate) differentially sensitive to skill, argument for cross-matching
  – higher skill in managerial position
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• But if skill levels too different, then homogeneous-matching better
  – tasks are complementary
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• Matching pattern that arises strikes balance between these two forces
  – depends on available distribution of skills
Apply this to our two countries
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\[ A > B > C > D \]

\( \underbrace{A > B} \)  \( \underbrace{C > D} \)

rich country  emerging country
Apply this to our two countries

\[ A > B > C > D \]

rich country

emerging country

\[ A = 13 \]
\[ B = 8 \]
\[ C = 6 \]
\[ D = 4 \]
Pre-globalization (no international production)

As and Bs
cross-matched

Cs and Ds
cross-matched
Pre-globalization (no international production)

As and Bs cross-matched

Post-globalization (international production possible)

Bs and Cs cross-matched
Ds homogeneously-matched
Pre-globalization (no international production)

$A$ $B$

$A$ $B$

$A$ and $B$s cross-matched

$C$ $D$

$C$ $D$

$C$s and $D$s cross-matched

Post-globalization (international production possible)

$A$

$A$

$B$ $C$ $D$

$B$s and $C$s cross-matched

$D$s homogeneously-matched

- Similar conclusion for other skill distributions
Pre-globalization (no international production)

As and Bs cross-matched

Post-globalization (international production possible)

Bs and Cs cross-matched

Ds homogeneously-matched

• Similar conclusion for other skill distributions
  – what’s important is that D-worker’s skill not high enough to match with B- or A- workers
• What is effect of globalization on wages?
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  – Competition implies worker paid according to productivity
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  – Before globalization, \( D \)-workers benefited from being matched with higher-skill \( C \)-workers (this enhanced their productivity)
• What is effect of globalization on wages?
  – Competition implies worker paid according to productivity
  – Before globalization, $D$-workers benefited from being matched with higher-skill $C$-workers (this enhanced their productivity)
  – After globalization, $D$-workers left to homogeneously match
    So $D$-worker wages fall
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    So \( D \)-worker wages fall
  – By contrast, \( C \)-worker wages rise
    (because of new international matching opportunity with \( Bs \))
• What is effect of globalization on wages?
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  – After globalization, D-workers left to homogeneously match
    So D-worker wages fall
  – By contrast, C-worker wages rise
    (because of new international matching opportunity with Bs)
• So inequality in emerging country is made worse
Strong policy implication:
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Raise skill level (through job training) of $D$-workers, so have international matching opportunities too
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Who’s going to pay?
Strong policy implication:

Raise skill level (through job training) of $D$-workers, so have international matching opportunities too

Who’s going to pay?

• not workers themselves
Strong policy implication:

Raise skill level (through job training) of \(D\)-workers, so have international matching opportunities too

Who’s going to pay?

• not workers themselves
  – probably can’t afford to
Strong policy implication:

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Who’s going to pay?

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• not producers
Strong policy implication:

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Who’s going to pay?

• not workers themselves
  – probably can’t afford to

• not producers
  – training raises workers’ productivity
Strong policy implication:

Raise skill level (through job training) of $D$-workers, so have international matching opportunities too

Who’s going to pay?

• not workers themselves
  – probably can’t afford to

• not producers
  – training raises workers’ productivity
  – but then have to pay higher wages
Strong policy implication:

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  – domestic government
  – international agencies, NGOs
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• role for investment by *third parties*
  – domestic government
  – international agencies, NGOs
  – foreign aid
  – private foundations
Thus, if theory correct, right course of action:
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 – *not* to stop globalization
Thus, if theory correct, right course of action:

– *not* to stop globalization

– allow low-skill workers share benefits by investing in their training