

Measuring the Impact of the Movement of Labor Using a Model of Bilateral Migration Flows

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Temporary Movement of Natural Persons (TMNP)

- Mode 4 under the WTO's General Agreement of Trade in Services
 - Smallest in terms of trade volume and number of commitments.
- Commitments to date have been in the areas of highly skilled inter-corporate transferees.
- Limited benefit to developing economies with comparative advantage in low and medium skilled workers.

Benefits of Greater TMNP

- Liberalization of labor markets could significantly increase world income.
 - Hamilton and Whalley (1984), Tang and Wood (1999), Winters (2001), Rodrik (2004)
- TMNP implies labor supply and price-income changes that have to be considered in general equilibrium

Estimates of Impacts

- Regional

- Europe - Vaitinen (2002) , Kurzweil (2005), Brucker and Kohlhaas (2004)
- Asia - Chen et al (2000)
- North America – McKenzie (2005), Dixon et al (2009)

- Global

- Tyers et al (2006)
- World Bank (2006) - 3% increase between 2001-25, US\$ 674 billion global welfare gain
- Walmsley and Winters (2005) - 3% increase, US\$ 156 billion (1997)

Objectives

- What is the impact of raising TMNP quotas on both skilled and unskilled labor by **3% of the host countries' labor forces**?
 - Short to medium run timeframe (~5 years)
 - Contrast with analyses of longer term labor movements over extended periods, e.g. World Bank (2006)

Improvements over Walmsley and Winters (2005)

- Data on bilateral stocks of migrants
- Country specific
- Bilateral remittances
- Labour force by skill
- Model bilateral labor migration and remittances
- Real incomes (VS aggregate EV measures)
- Capture
 - key relationships between countries
 - the distributional impact of migration policies

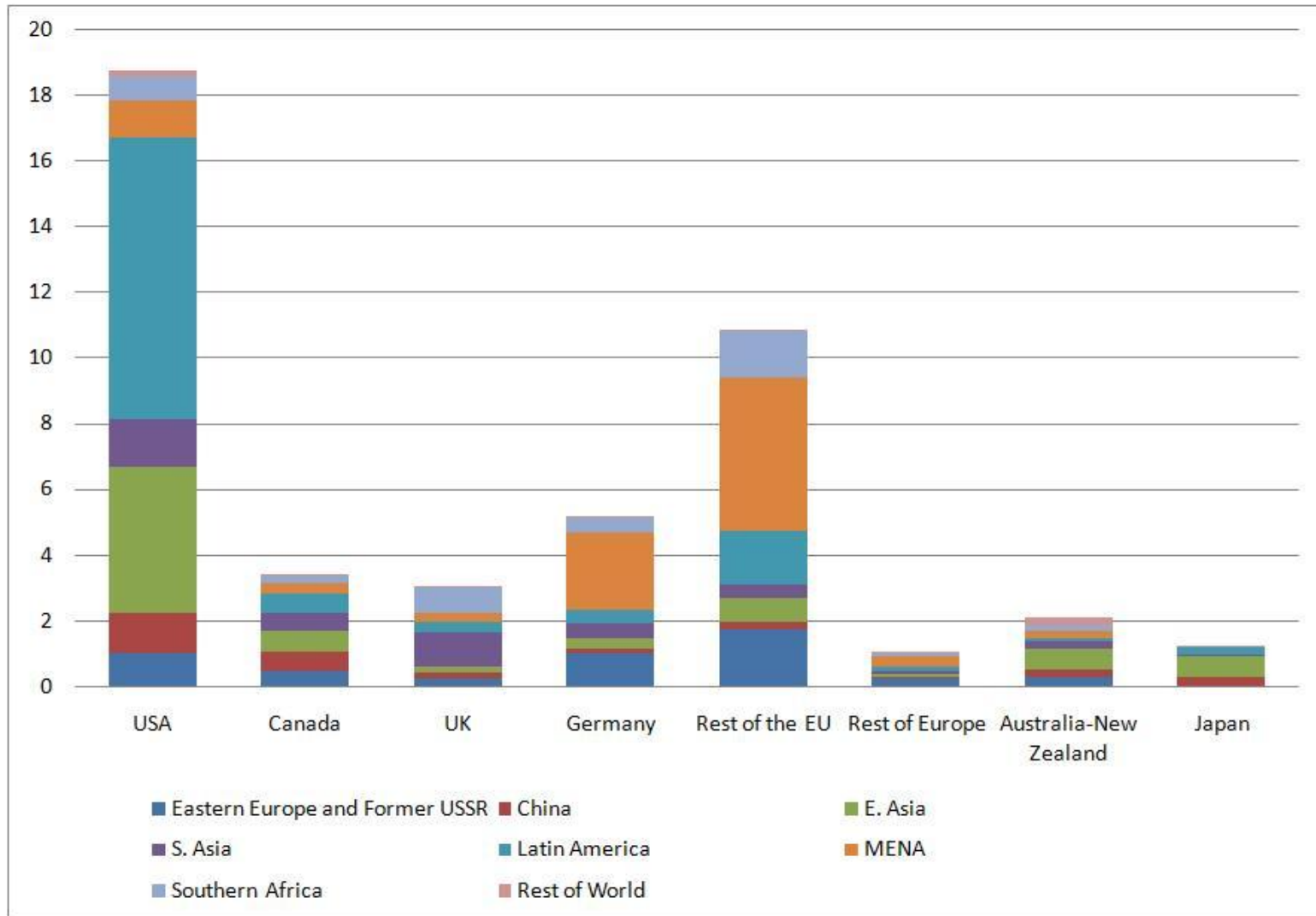
GMig2 Database

- Walmsley, Ahmed, and Parsons (2005)
- GTAP Data Base Version 6
 - 2001 base year
 - 87 countries/regions and 57 commodities
 - Input-Output tables, trade, protection, taxes and tariffs
- Bilateral Migration Data

Bilateral Migration Data

- Parsons, Skeldon, Walmsley and Winters (2007)
 - 226*226 matrix of migrant stocks
 - Sources: Censuses, Registers, Permits, Surveys
- Labor force participation rates of migrant population same as in the home region
- Skill Splits
 - Used splits of Docquier and Marfouk (2005)

Foreign Workers by Host Region in 2001 (millions)



Wages and Remittances

- Wages

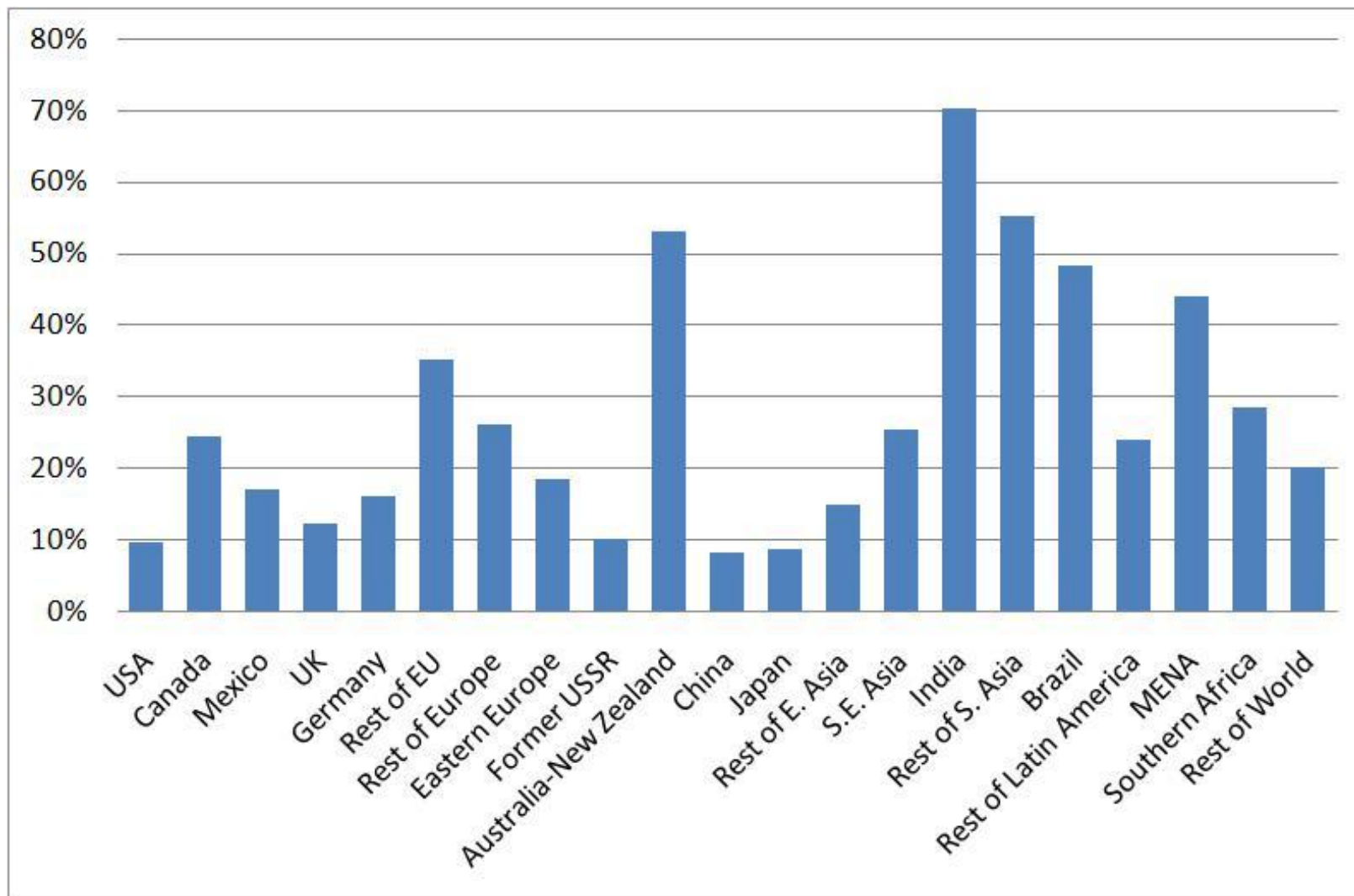
$$W_{\text{migrants}} = W_{\text{home}} + \beta(W_{\text{host}} - W_{\text{home}})$$

- β is fixed proportion, set to 0.75 in this model
- Foreign workers have different wages and productivities to domestic workers
- e.g. if labor earns \$5 at home and \$10 abroad, then a migrant will earn \$8.75 ($5 + 0.75 \times (10-5)$) abroad

- Constructed Remittances

- Total 'remittances in' obtained from Ratha (2003), equal to 'remittances in' plus worker's compensation from IMF.
- Remittances bilateralized using constant remittances to wage ratio and migrant data

Share of Migrant's Income Sent Home as Remittance by Home Region



Source: Walmsley et al (2005)

Key Features of GMig2 Model

- Based on GTAP Model
 - Comparative static applied general equilibrium model
 - Regional household allocates income across consumption, government and saving
 - Perfect competition
 - Armington assumption
 - Transport margins and global bank
 - Welfare and welfare decomposition

Labor Flows in GMig2

- Labor force

$$LF = LF_{\text{home}} + \text{Migrants}$$

- domestic and foreign workers.
- changes in labor forces implemented as exogenous shocks.
- foreign and domestic labor are treated as perfect substitutes
- labor supply is distributed across sectors to equate the % changes in wages.

Migrant Incomes in GMig2

- Migrants' income depends on wages less remittances
 - No income from ownership of capital or land, but migrants do pay taxes.
 - Remittances as constant share of income add to income of home region.
 - Real income changes of migrants take into account differences in PPP between home and host regions.
- Non-movers' income depends on income from factors, taxes and remittances received.

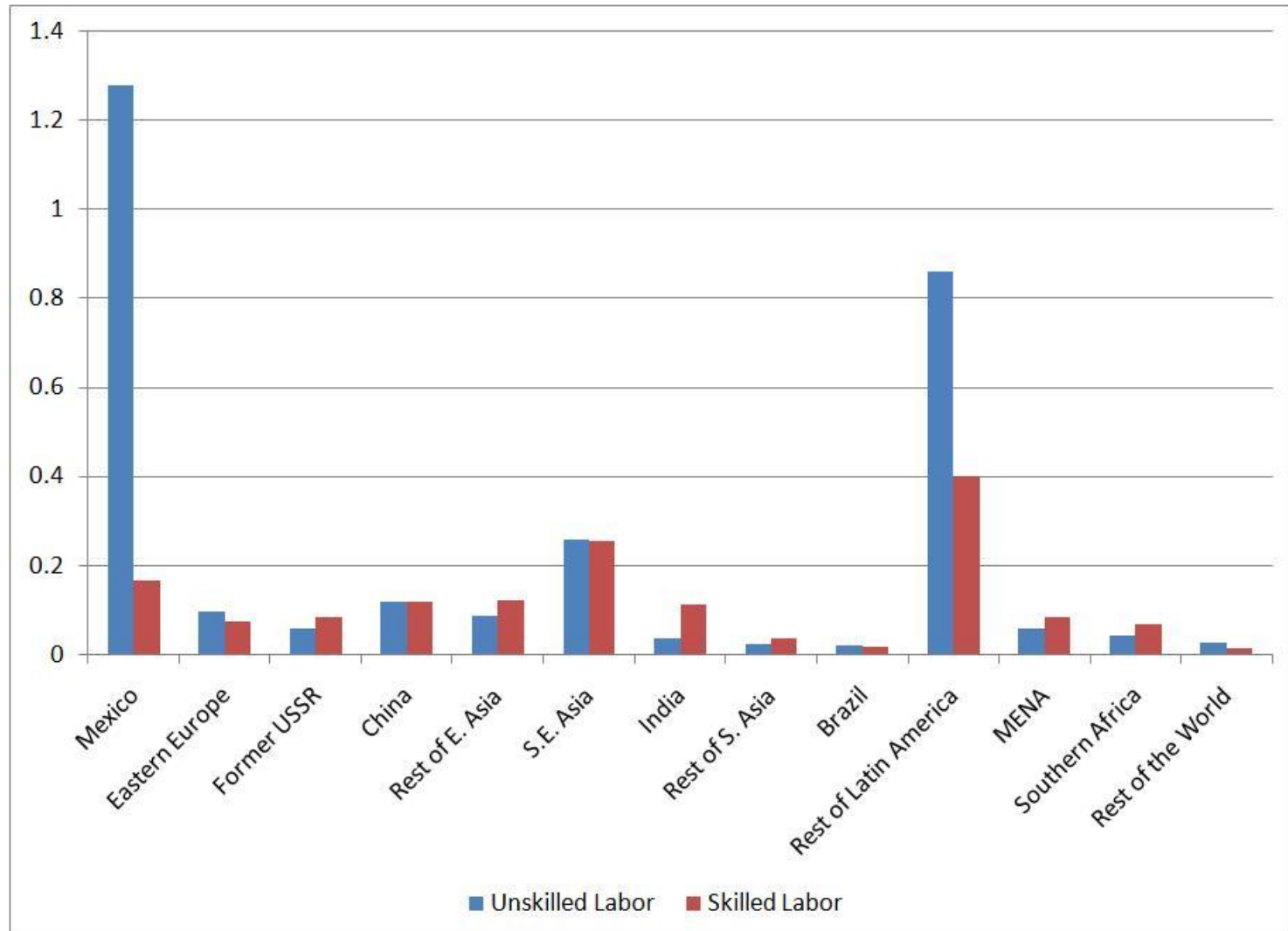
Simulation

- Increase in quotas of 3% of the labor force (skilled and unskilled) of developed economies
- Supplied by developing economies according to shares in benchmark database
- Full employment

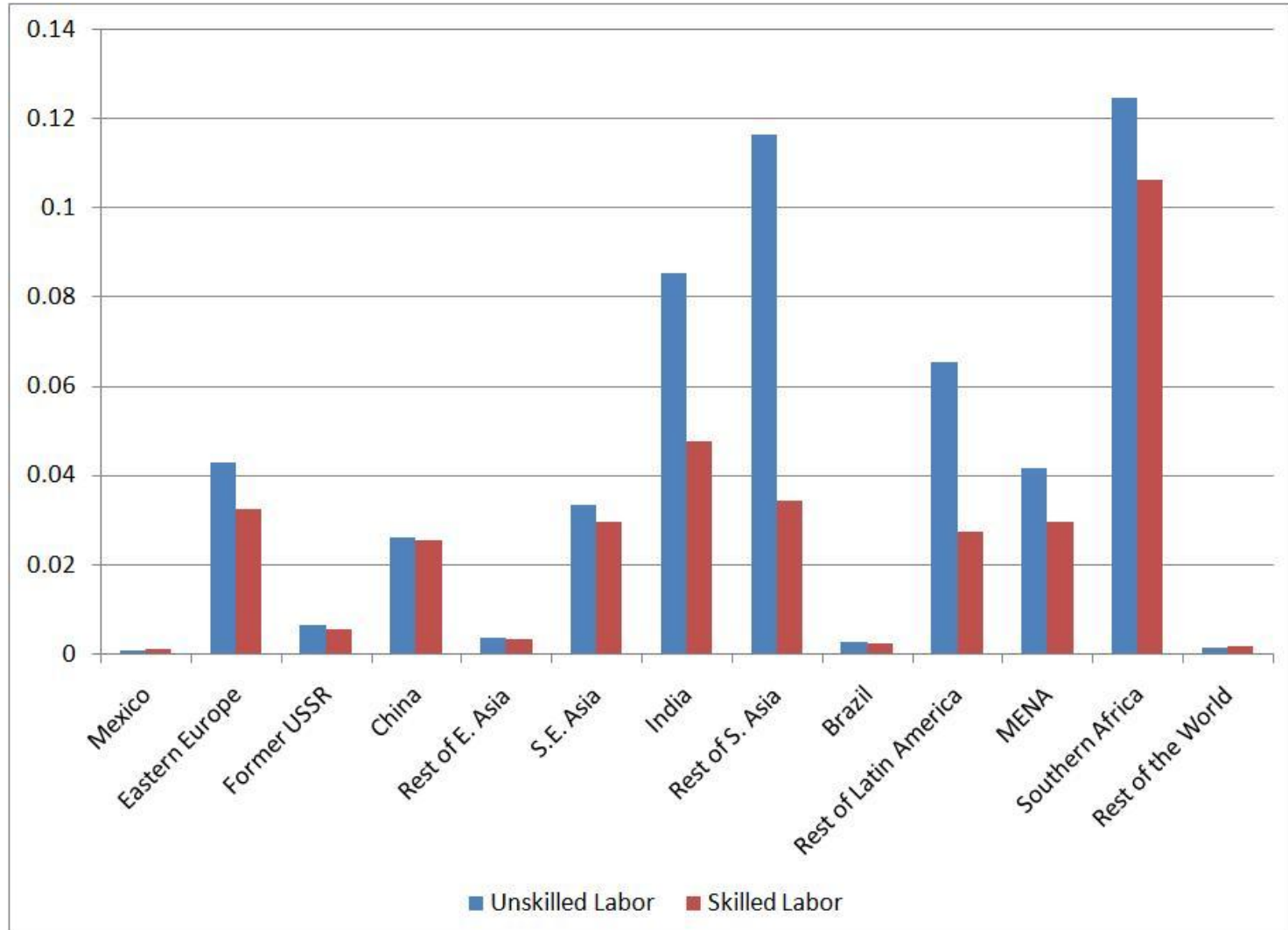
Improvements in Simulation over Walmsley and Winters (2005)

- Improved estimates of skill shares have resulted in less skilled migrants overall (4.3m as opposed to 8m).
- Improved estimates of bilateral relations – e.g., more workers flow from Mexico and Latin America to the USA and from Eastern Europe to Europe.
- Improved estimates of skill shares for migrants – e.g., Mexico supplies mostly unskilled workers, while East Asia supplies more skilled.

New Migrants in USA by Home Region(millions)



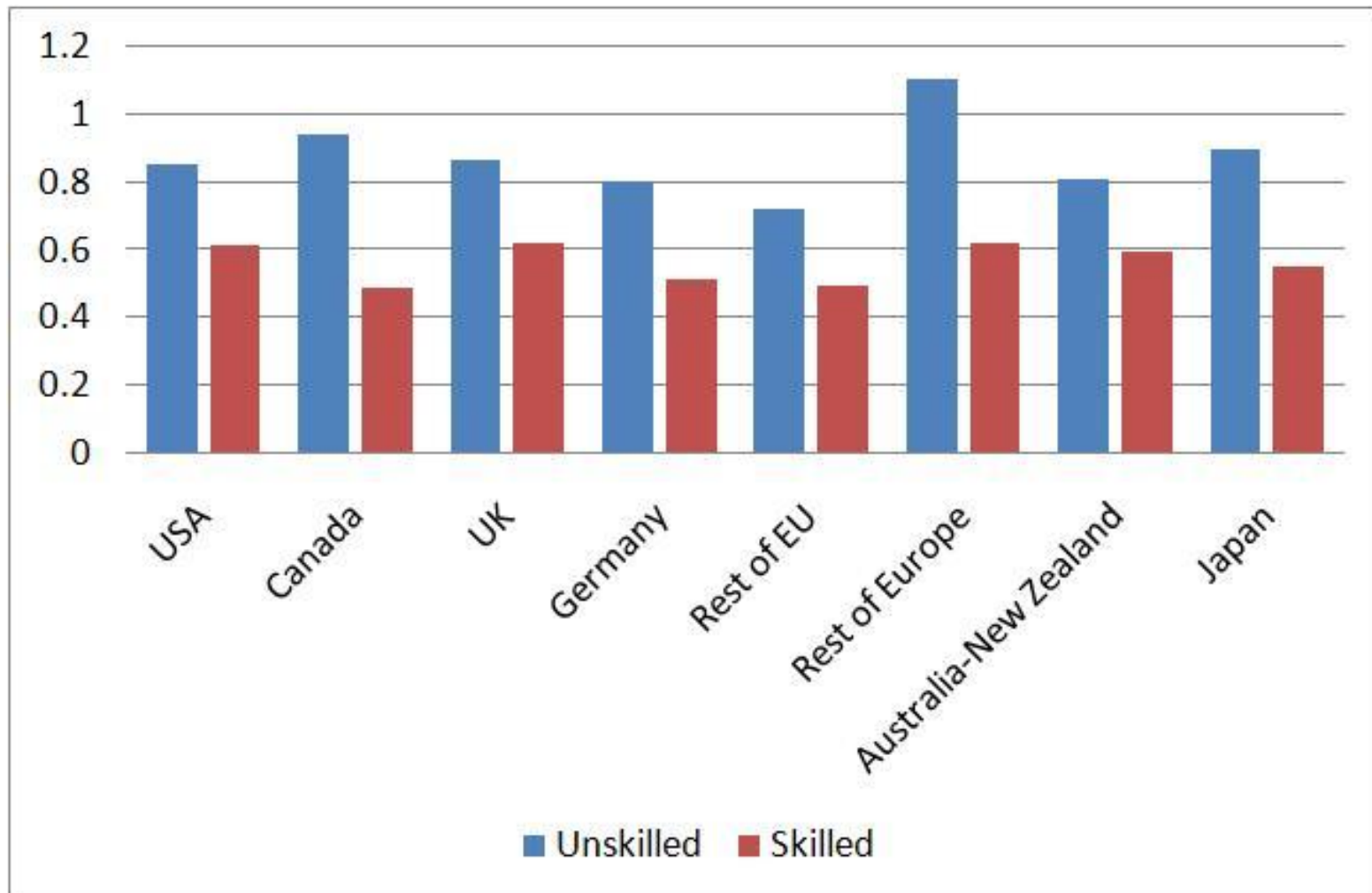
New Migrants in UK by Home Region(millions)



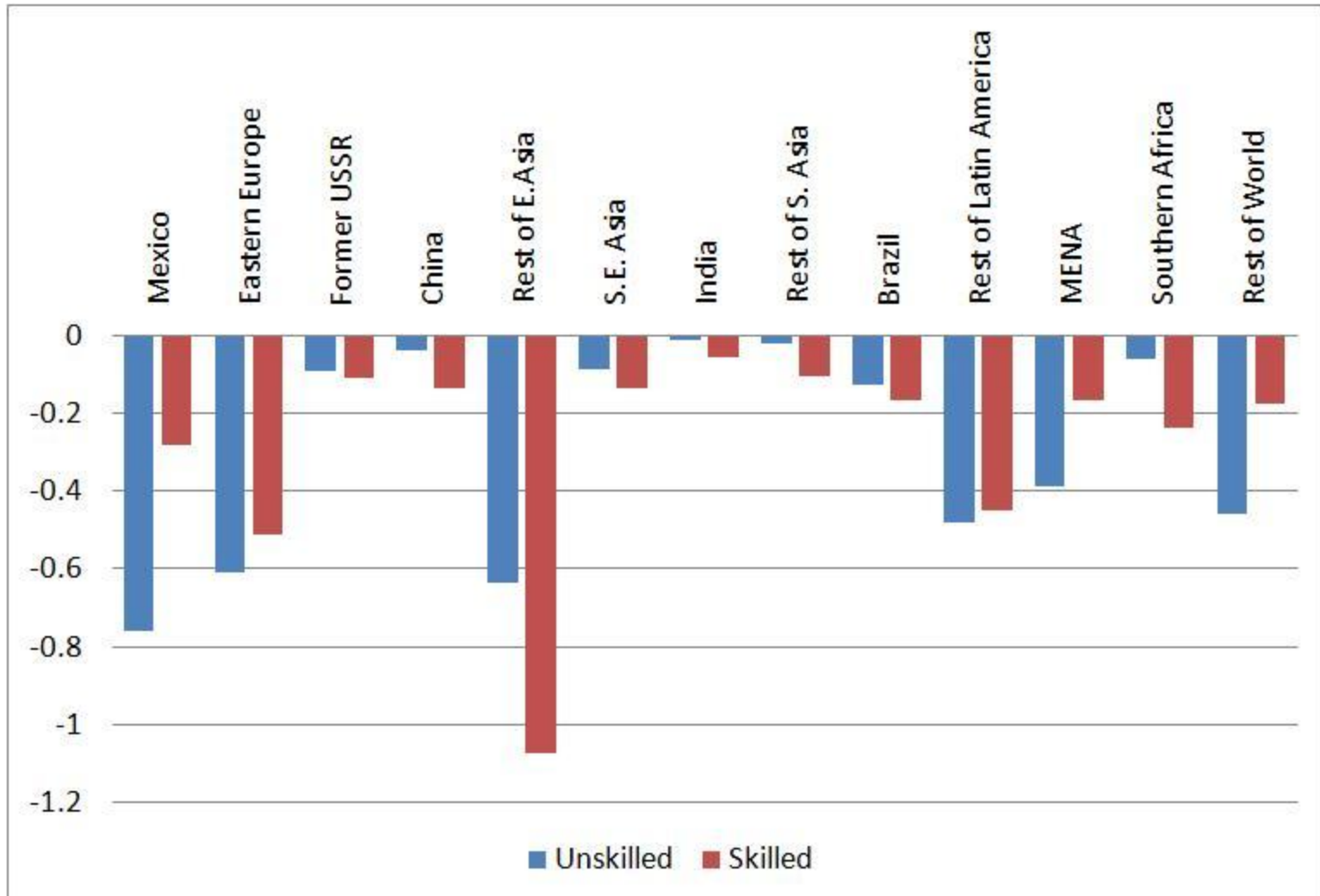
Global Real GDP Change

- 0.56% change due to migration of unskilled =>
US\$ 175 billion
- 0.35% change due to migration of skilled =>
US\$ 112 billion
- Bigger than Walmsley and Winters (2005), smaller than World Bank (2006)
- Impacts are not uniform across host and home countries

Percent Change in Real GDP – Developed Countries



Percent Change in Real GDP – Developing Countries



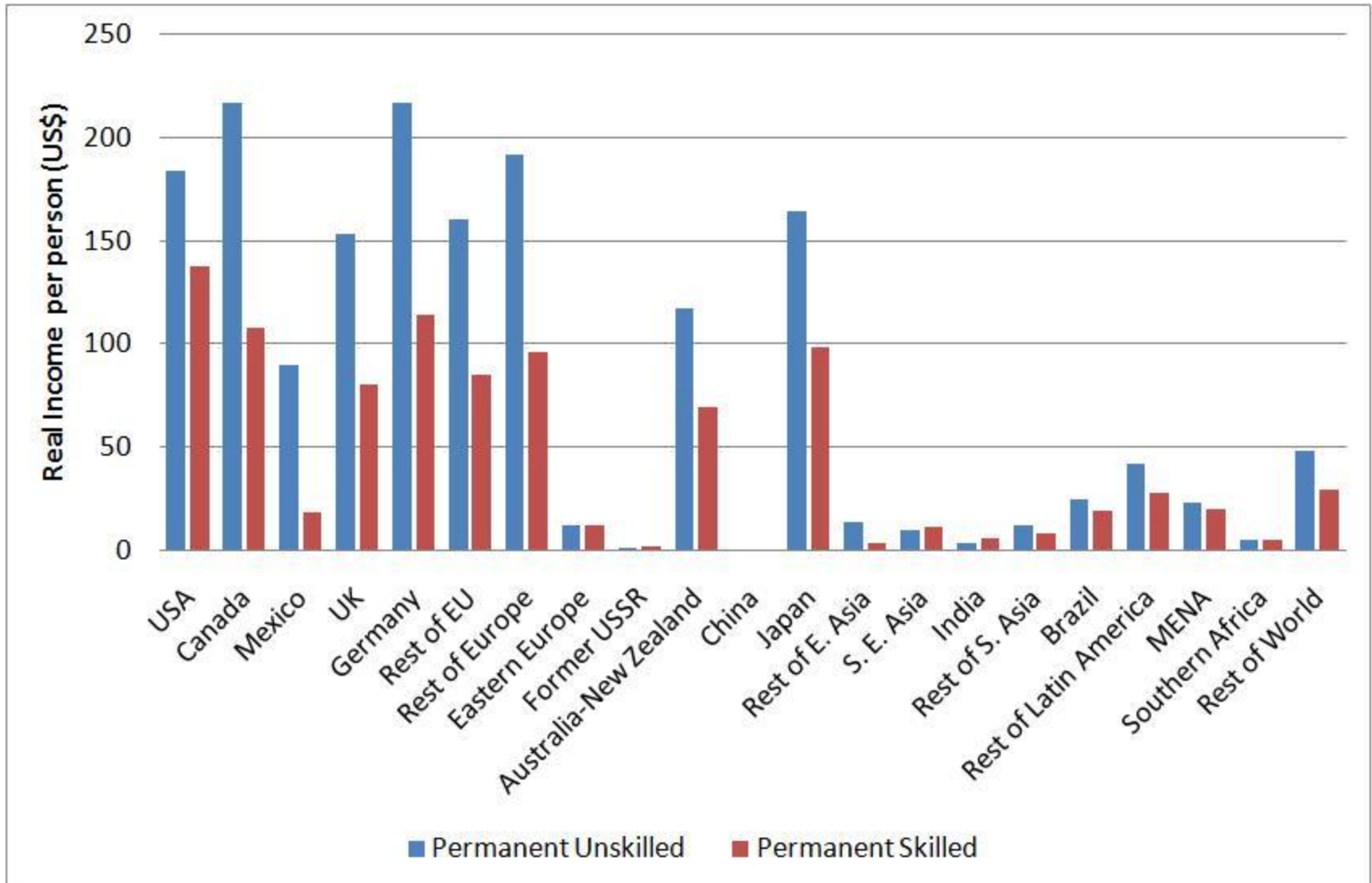
Percent Changes in Factor Returns

		USA	Mexico	UK	India
Real wages of unskilled	Unskilled	-1.30	2.35	-1.17	-0.03
	Skilled	0.40	-0.16	0.38	-0.02
Real wages of skilled	Unskilled	0.52	0.03	0.56	0.05
	Skilled	-1.48	2.29	-1.49	0.75
Real return to capital	Unskilled	0.66	-0.47	0.63	-0.13
	Skilled	0.48	-0.19	0.43	-0.11




Trade

		USA	Mexico	UK	India
Change in Terms of Trade (%)	Unskilled	-0.28	0.49	-0.12	0.21
	Skilled	-0.24	0.16	-0.11	0.50
Change in Trade Balance (US\$ millions)	Unskilled	7089.51	-1466.57	1451.72	-746.44
	Skilled	7238.04	94.93	838.86	-1820.22
Change in Current Account Balance (US\$ millions)	Unskilled	-4166.65	2551.75	-1226.25	1142.28
	Skilled	-2556.25	860.98	-868.40	1065.63
Exports (%)	Unskilled	1.43	-1.81	1.36	-1.15
	Skilled	1.18	-0.19	0.85	-2.72
Imports (%)	Unskilled	0.23	-0.51	0.72	0.24
	Skilled	0.08	-0.10	0.43	0.64

Changes in Real Incomes of Permanent Resident Non-Movers



Conclusions

- Increase in TMNP quotas
 - Equivalent to 3% of developed countries' labor forces
 - Coming from developing countries
- Global real GDP change = 0.92% (US\$ 284 billion)
 - Developed countries' 
 - Developing countries' 
 - Impacts are driven mostly by unskilled labor movements
- Real incomes of permanent residents in all countries 
- Better ability to capture nuances in the income effects; distributional impacts of migration policies.
- Limitations: better wage data, actual bilateral remittances