International migration and brain drain from developing countries

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Why do we know little about developing countries brain drain?

- International migrants increased by about 3 million a year: 78 million in 1965 - 191 million in 2005 (United Nations)
- Recorded remittances flows sent home by migrants from developing countries $251 billion in 2007 (World Bank prospects group)
- Official remittances received by developing countries have more than doubled since 2000 (+118%)
- International migration has emerged as a central issue in public policy debates, especially the brain drain from developing countries and its impact on source countries

Why do we know little about developing countries brain drain?

- Very large consensus that international migration statistics are poor
- Official statistics in countries of origin do not give a realistic picture of emigration: When available they are incomplete and not precise
- Despite many case studies and anecdotal evidences the magnitude of the brain drain form developing countries was unknown
  - Debate on the consequence of emigration of highly skilled workers on sources countries has remained for long period exclusively theoretical
  - Until recently nobody was able to estimate the global cost of the brain drain on source countries
- Recently international agencies (OECD & World Bank) and researchers put significant efforts in the development of new databases on international migration and brain drain

New/original data set on international migration and brain drain

- Docquier, Lowell and Marfouk (2007)
- What we did and how we did it?
- First step: Migration stock (absolute numbers)
- Collecting data from the 30 OECD members states, for two periods (1990 and 2000), with the highest level of detail on country of birth
- 3 levels of education (low-skilled, medium-skilled and highly skilled)
- Second step: Emigration rates by educational level
  - 1,034,373 Indian highly skilled emigrants (4% of HLF)
  - 4,448 highly skilled emigrants from Gambia (68% HLF)

How big is the brain drain from developing countries?

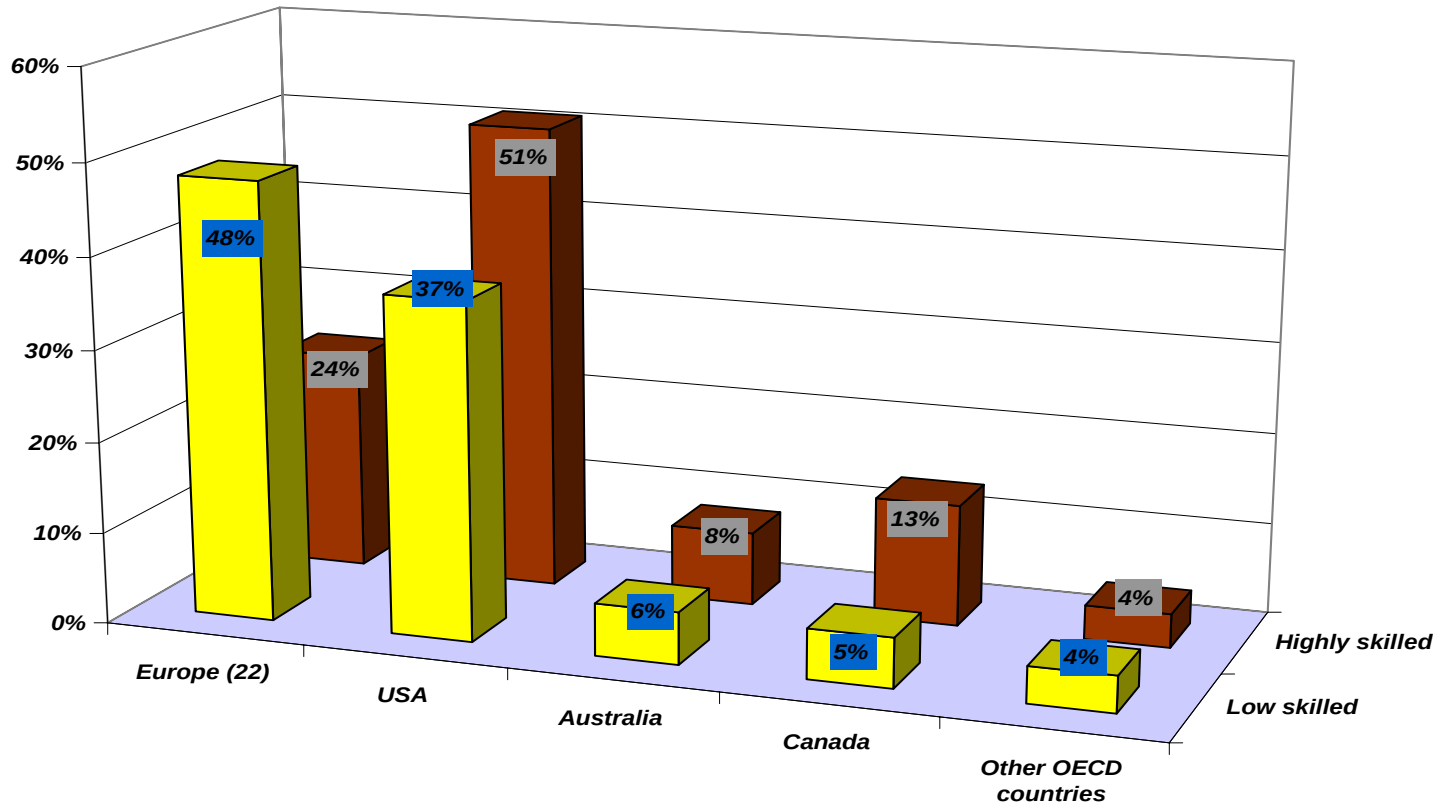
	Emigration structure					Labor force structure
Year 2000	Total Emigrants (thousands)	In % of the total	Skilled Emigrants (thousands)	In % of the total	Share of skilled among emigrants in %	Share of skilled in %
World	58,246	100	20,442	100	35	11
Africa	4,352	8	1,373	7	32	4
Sub-Saharan Africa	2,137	4	934	5	44	3
Asia	15,198	26	7,002	34	46	6
Europe	21,170	36	6,864	34	32	18
Latin America and Caribbean	13,960	24	3,682	18	26	12
South-Eastern Europe	1,849	3	386	2	21	14
High income countries	19,717	34	7,911	39	40	30
Developing countries	37,289	64	12,339	60	33	6
Upper Middle income countries	15,339	26	3,729	18	24	13
Lower Middle income countries	15,505	27	5,691	28	37	5
Low income countries	6,445	11	2,918	14	45	4
Least developing countries	2,364	4	813	4	34	2
MENA region	3,587	6	1,125	6	31	9
Arab countries	3,215	6	869	4	27	8

The world is the sum of developing countries, high-income countries, and emigrants who did not reported their country of birth. Immigrant and labor force correspond to individuals aged 25 and over.

Source: Docquier, Lowell & Marfouk (2007)

How big is the brain drain from developing countries?

Destination of international migrants, in percentage of the total OECD, by skill level, 2000



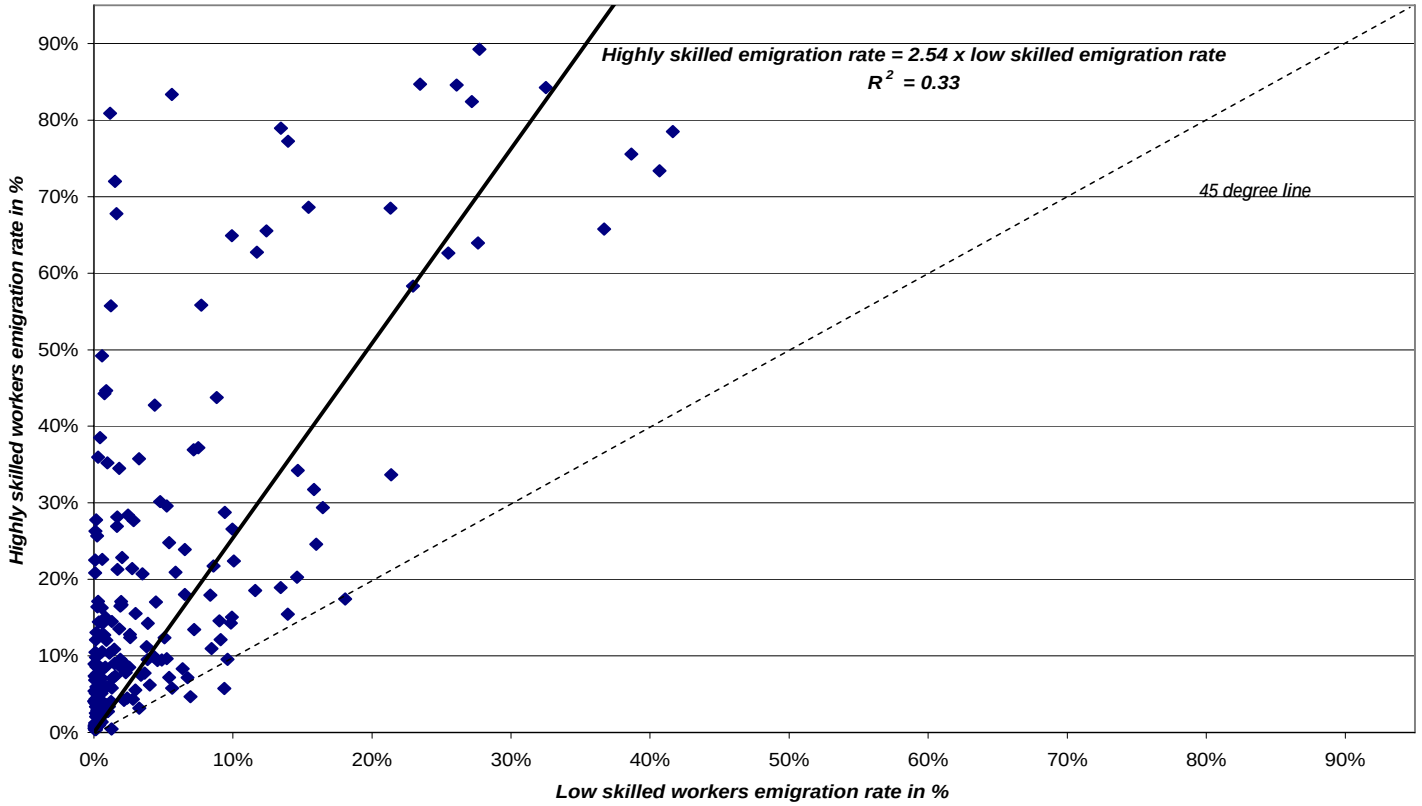
Source: Docquier, Lowell & Marfouk (2007)

How big is the brain drain from developing countries?

2000	Emigration rates		
Region of origin	Global	Low-skilled	Highly skilled
World	1.8	1.3	5.5
Africa	1.4	0.9	10.4
Asia	0.8	0.4	5.7
Europe	4.1	4.3	7.2
Oceania	4.3	2.5	7.1
America	3.3	4.0	3.3
High income countries	2.9	3.6	3.8
Developing conuntries	1.5	1.0	7.3
Upper Middle income countries	3.5	3.6	6.2
Lower middle income countries	1.3	0.9	8.1
Low income countries	0.7	0.3	7.5
Least developing countries	0.9	0.5	12.3
South-Eastern Europe	11.1	11.0	15.5
Sub-Saharan Africa	0.9	0.4	12.3
LAC region	5.3	4.1	11.0
MENA region	2.7	2.0	9.1
Arab countries	2.6	2.1	8.2
OECD countries	3.7	5.2	4.1
Small island developing states	13.8	9.0	42.4
Landlocked developing countries	1.0	0.5	6.0
Large countries	0.9	0.6	3.0

Source: Docquier, Lowell & Marfouk (2007)

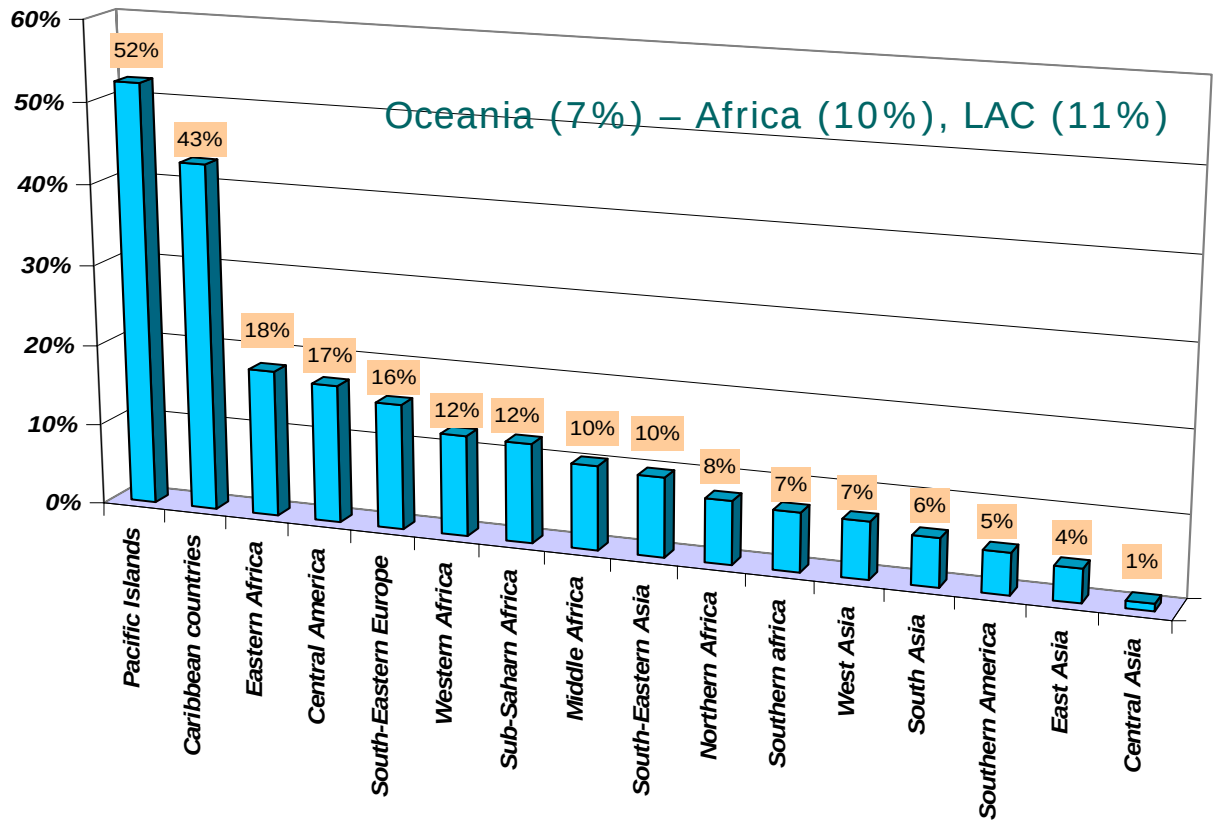
Comparison between Low skilled and highly skilled workers emigration rates, in percentage, 2000



Source: Docquier, Lowell & Marfouk (2007)

How big is the the brain drain from developing countries?

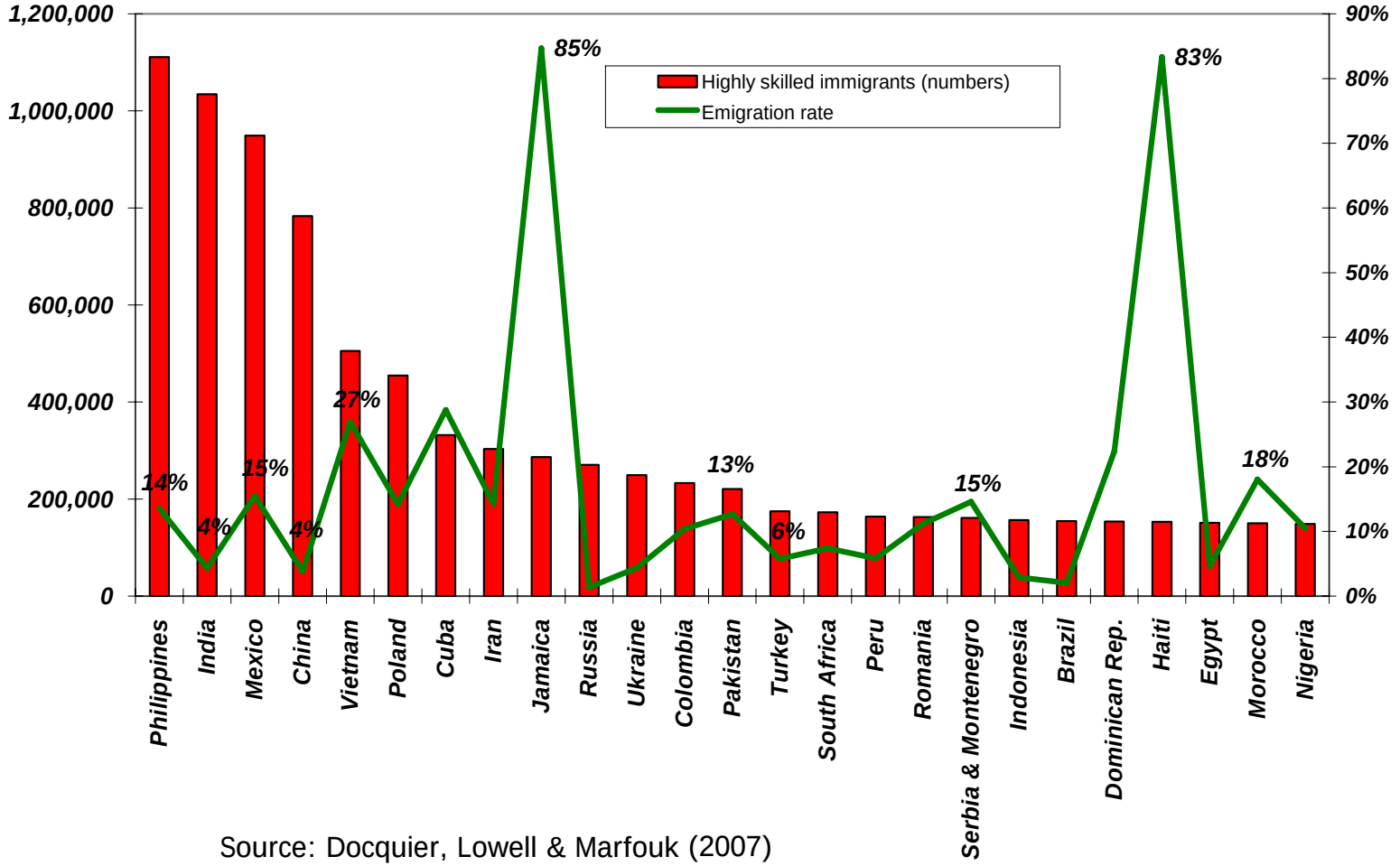
Highly skilled workers emigration rates, in percent, 2000



Source: Docquier, Lowell & Marfouk (2007)

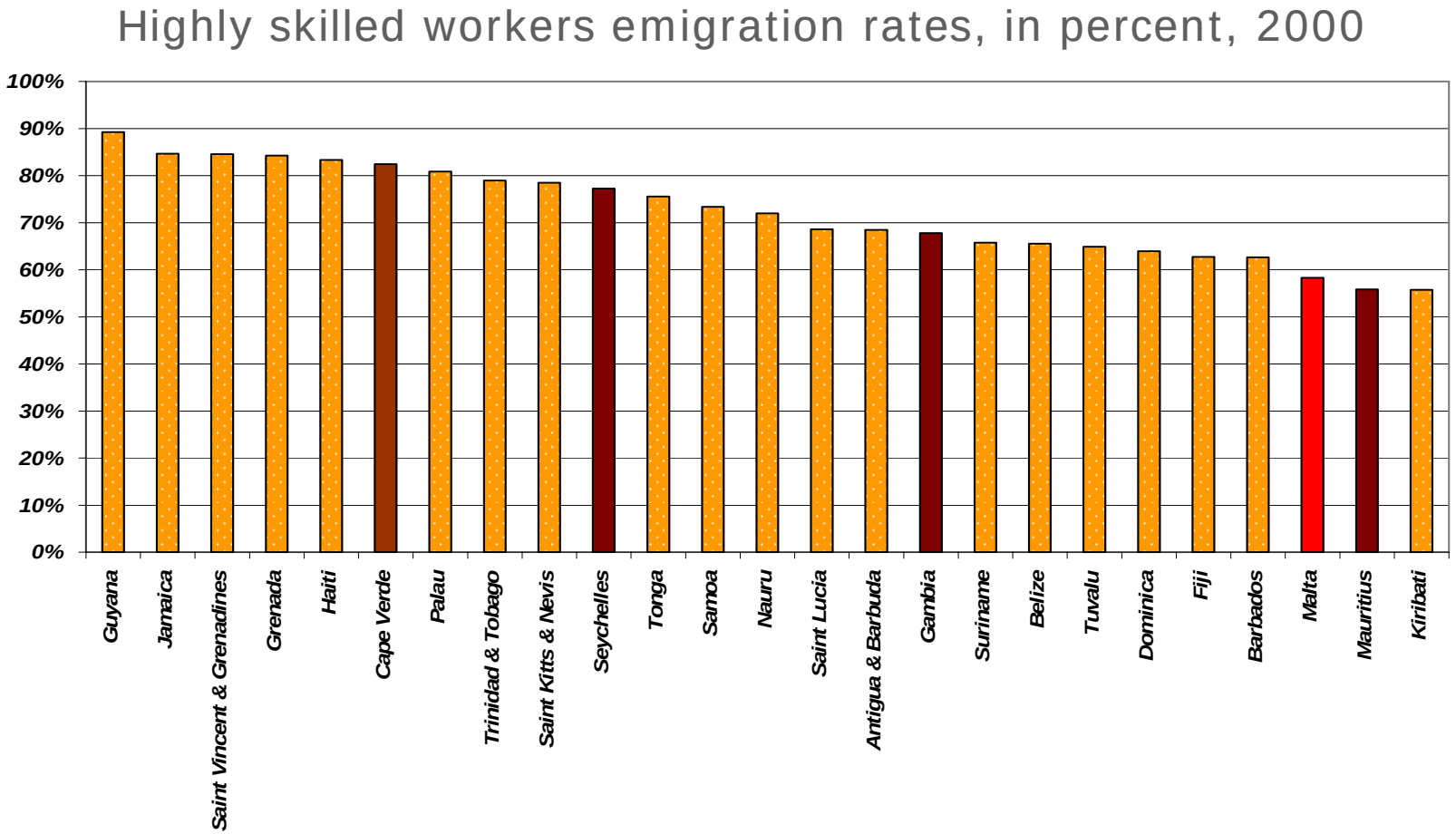
How big is the brain drain from developing countries?

Emigration stock (absolute numbers) and rates (%) of highly skilled workers, 2000



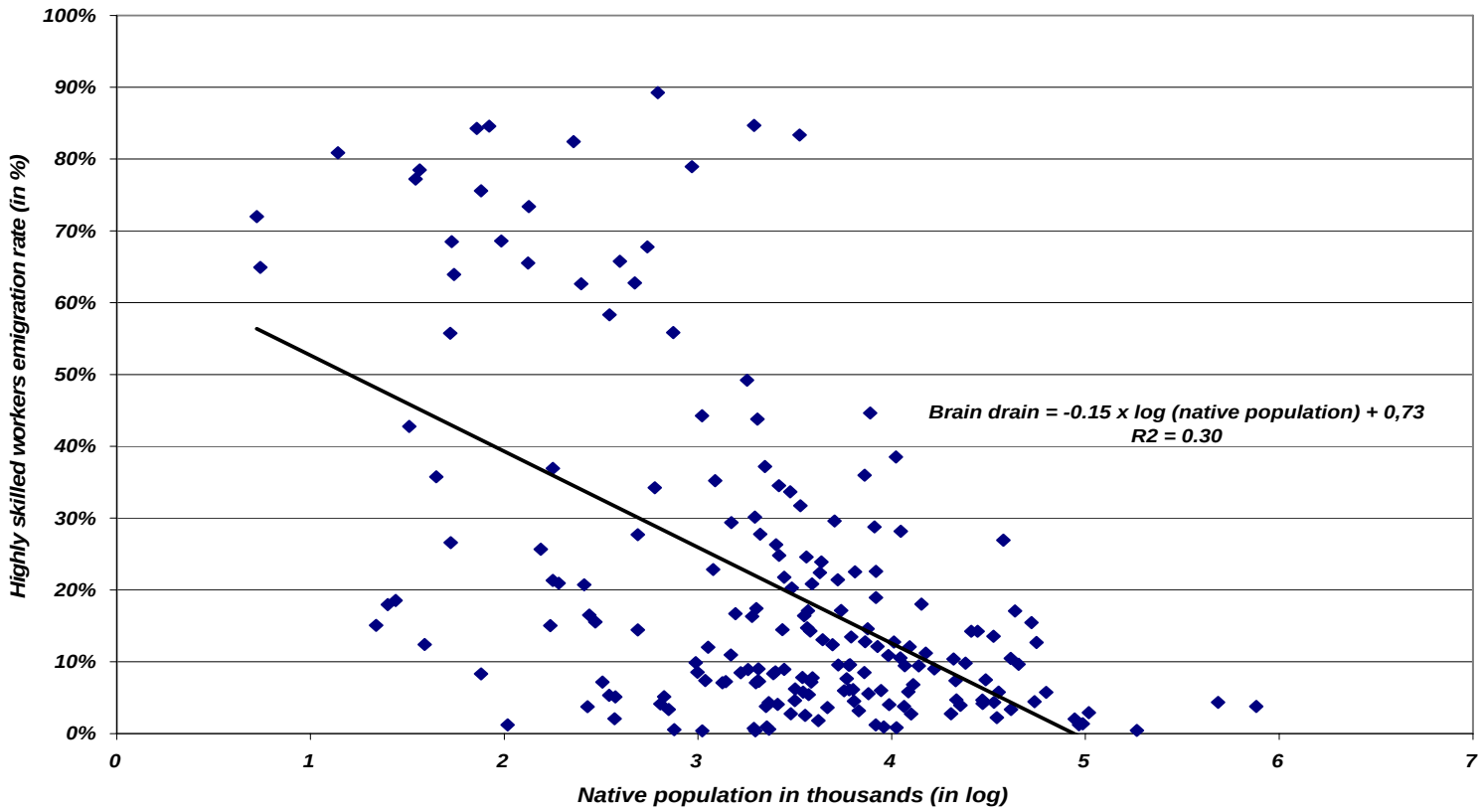
Source: Docquier, Lowell & Marfouk (2007)

How big is brain drain from developing countries?



Source: Docquier, Lowell & Marfouk (2007)

Highly skilled workers emigration rate decrease with countries of origin population size



Source: Docquier, Lowell & Marfouk (2007)

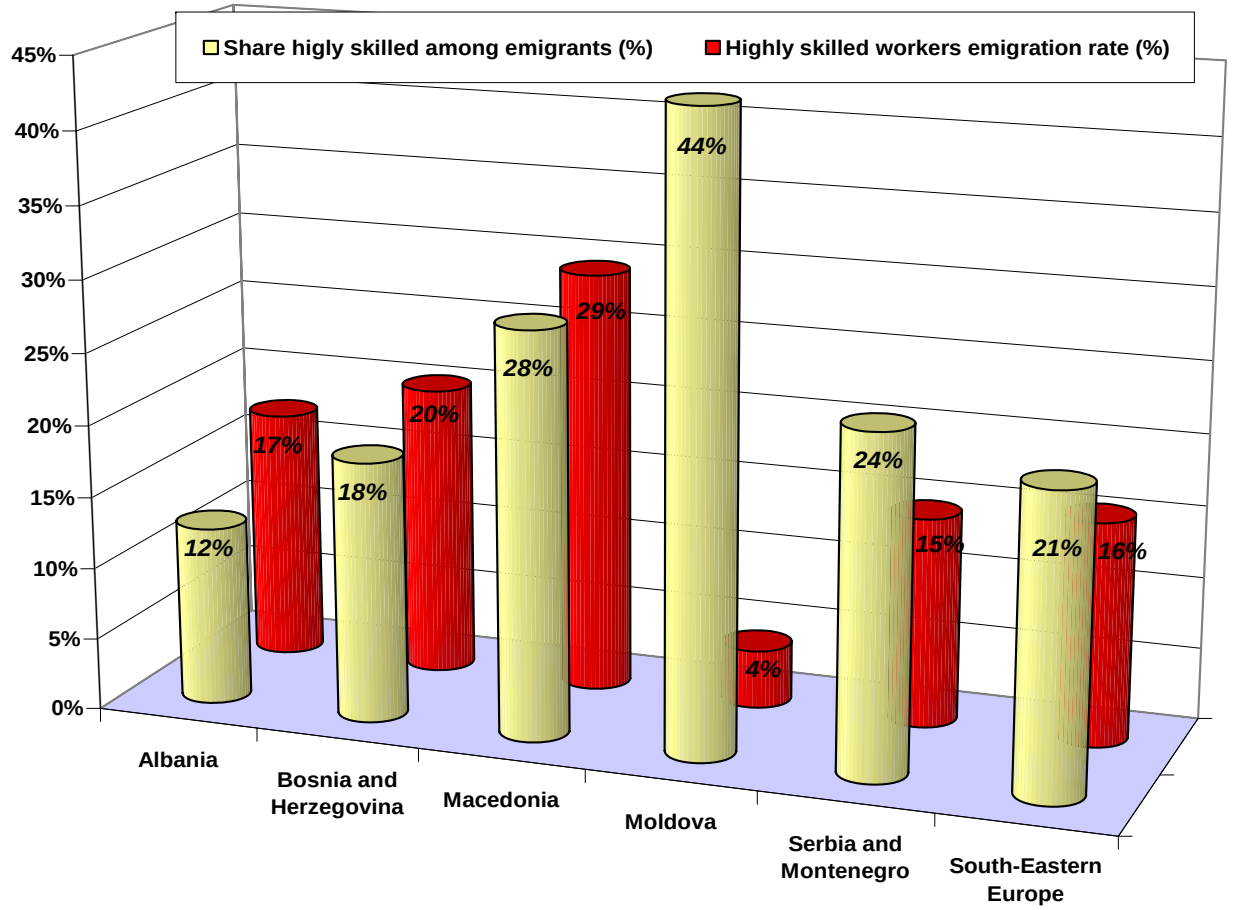
How big is the brain drain from developing countries?

Brain drain from Africa, situation in 2000

Country of origin	Highly skilled emigrants	Country of origin	Selection high	Country of Origin	Selection low	Country of origin	Highly skilled emigration rate
South Africa	173,411	South Africa	65%	Eritrea	41%	Cape Verde	82%
Morocco	155,994	Nigeria	64%	Congo Rep.	39%	Seychelles	77%
Egypt	151,451	Egypt	59%	Central African Rep.	38%	Gambia	68%
Nigeria	148,780	Liberia	58%	Togo	37%	Mauritius	56%
Algeria	87,777	Zimbabwe	56%	Cote d'Ivoire	35%	Sierra Leone	49%
Kenya	80,287	Botswana	53%	Djibouti	33%	Ghana	45%
Ghana	67,105	Namibia	52%	Seychelles	31%	Liberia	44%
Ethiopia	52,538	Tanzania	51%	Mozambique	29%	Kenya	39%
Tunisia	40,226	Burundi	51%	Mauritius	29%	Uganda	36%
Congo Dem. Rep.	38,017	Sudan	51%	Somalia	28%	Eritrea	35%
Uganda	35,921	Gabon	51%	Burkina Faso	28%	Somalia	35%
Zimbabwe	34,017	Cameroon	50%	Gambia, The	27%	Rwanda	32%
Tanzania	33,125	Lesotho	50%	Guinea	21%	Congo Rep.	28%
Somalia	26,758	Ethiopia	49%	Equatorial Guinea	19%	Guinea-Bissau	28%
Mauritius	23,185	Libya	49%	Senegal	17%	Sao Tome	27%
Cameroon	22,148	Rwanda	49%	Angola	17%	Mozambique	23%
Congo, Rep.	20,426	Zambia	48%	Mauritania	15%	Equatorial Guinea	21%
Liberia	20,347	Chad	48%	Tunisia	15%	Malawi	21%
Sudan	18,341	Sierra Leone	46%	Algeria	14%	Comoros	21%
Sierra Leone	16,647	Uganda	46%	Morocco	14%	Morocco	19%
Senegal	15,844	Kenya	45%	Comoros	13%	Cameroon	17%
Zambia	14,019	Swaziland	44%	Mali	11%	Senegal	17%
Cote d'Ivoire	13,674	Benin	44%	Cape Verde	11%	Togo	17%
Eritrea	12,939	Madagascar	43%	Guinea-Bissau	10%	Zambia	16%
Madagascar	12,506	Congo Dem. Rep.	43%	Sao Tome	9%	Congo Dem. Rep.	15%

Source: Docquier, Lowell & Marfouk (2007)

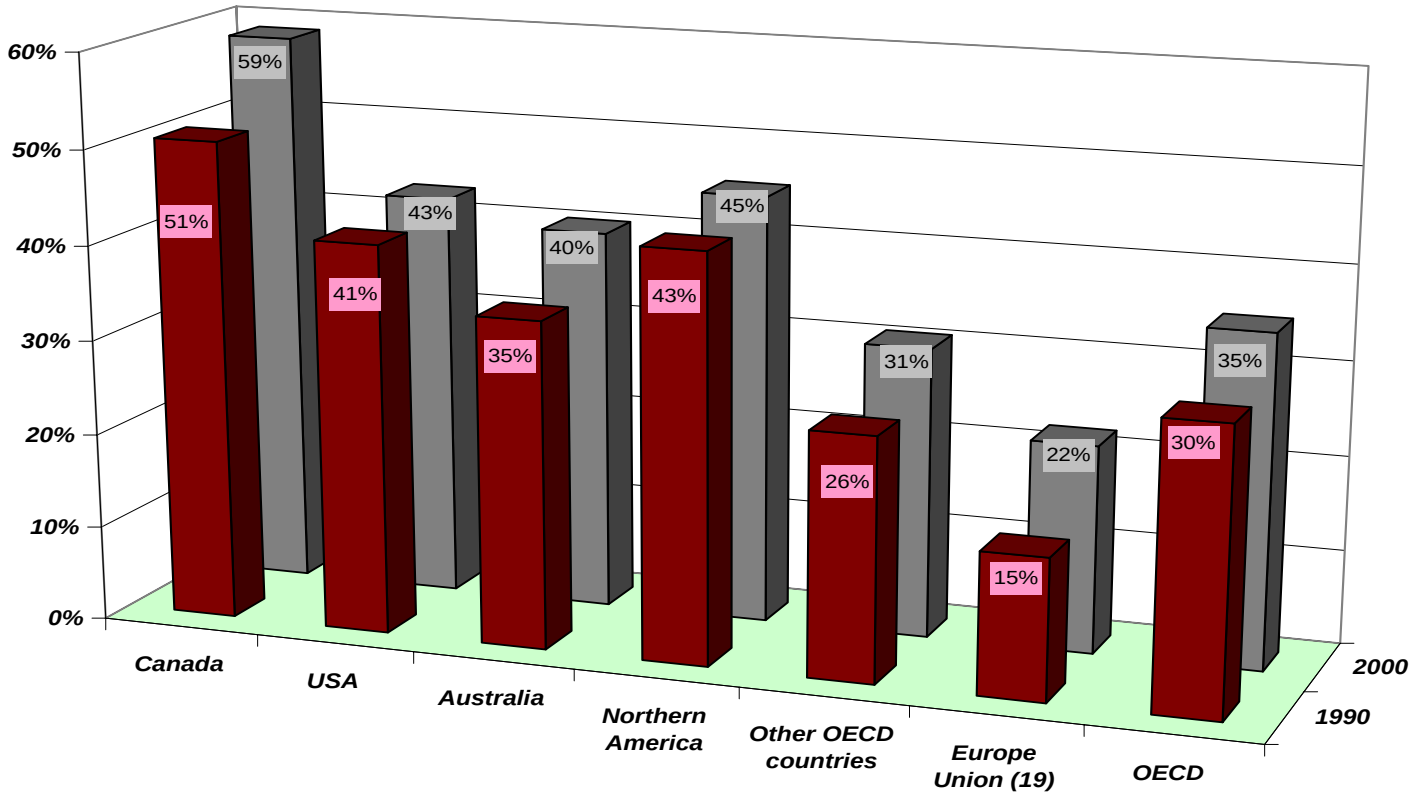
Brain drain from South-Eastern Europe



Source: Docquier, Lowell & Marfouk (2007)

Role of the EU countries in brain drain from developing countries

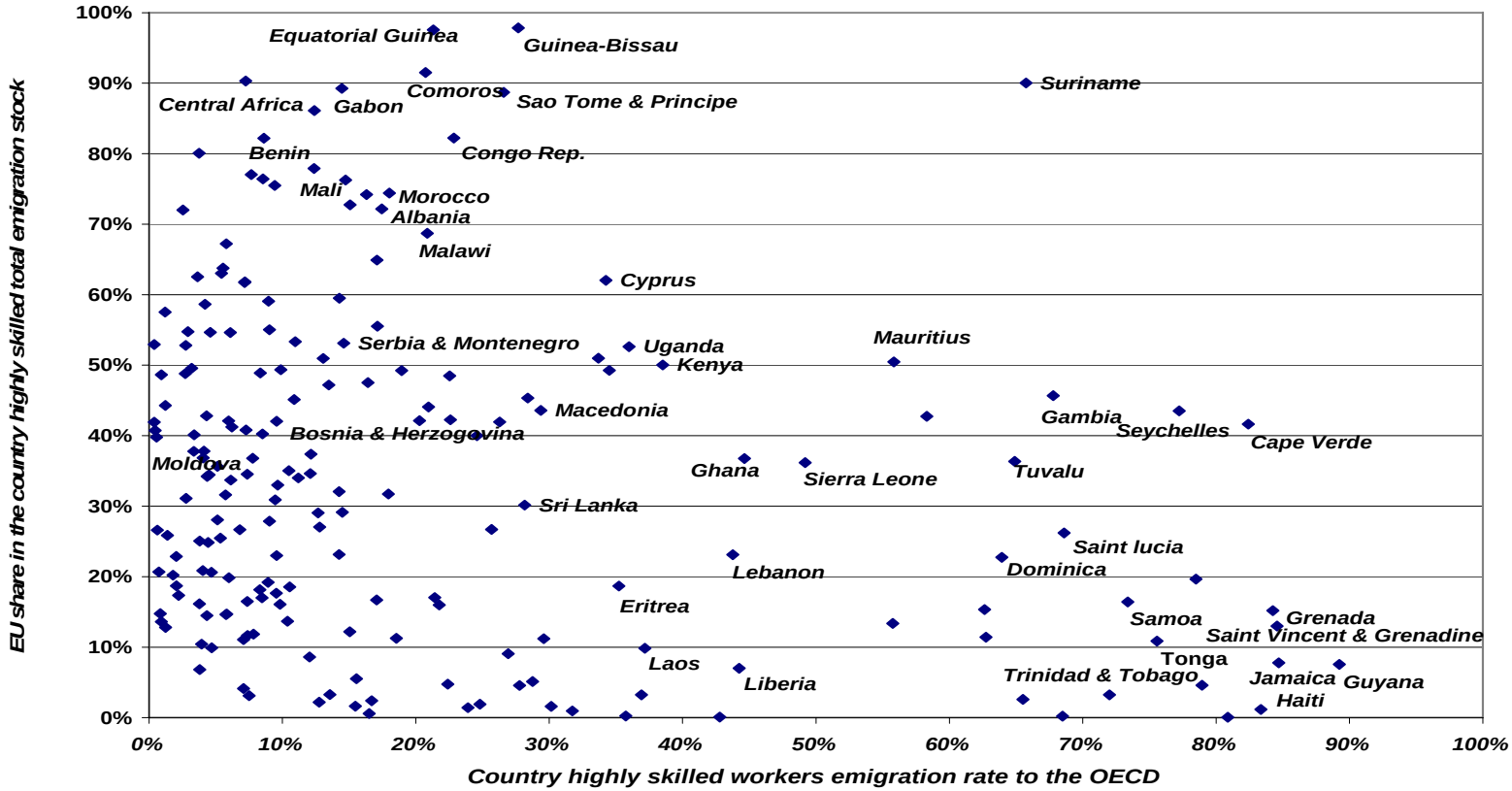
Proportion of highly skilled in total immigration (%), 1990-2000



Source: Docquier, Lowell & Marfouk (2007)

Role of the EU countries in brain drain from developing countries

Contribution of the EU countries in developing countries brain drain, 2000



Source: Docquier, Lowell & Marfouk (2007)

Impact of the brain drain on source countries

- Better endowed nations in human capital grew more rapidly
- “There is a strong consensus that deficiency in human capital is a major reason why poor countries remain poor », Stark (2004)
- Adult illiteracy rates remain above 70% in countries such as Mali (77%) and Burkina Faso (71%): UNESCO
- By 2005, number of researchers engaged in R&D per million inhabitants: Pakistan (80), South Africa (361), Mexico (464) – Sweden (6,095), USA (4,651)- Austria (3,473): UNESCO
- Burkina Faso (0.6), Chad (0.4) and Mali (0.8) physician density is <1 per 10,000 inhabitants - Far below WHO recommendations of 20 per 10,000 inhabitants, Austria: WHO
- By 2004, Sub-Saharan Africa (751 million: 123,000 physicians) – Italy (58 millions: 241,000 physicians), France (61 million: 203,487 physicians): UN & WHO

Impact of the brain drain on source countries: Traditional view

- Bhagwati (1976), Bhagwati & Hamada (1974, 1975), Miyagiwa (1991), Haque & Kim (1995), Bhagwati & Wilson (1989)
- Loss of investment of public spending on education of emigrants
- Highly skilled migrants are net fiscal contributors and their departure represent a fiscal lost
- Brain drain is blamed for depriving source countries of one of their scarcest ressource, human capital
- Human capital source of economic growth: the BD will negatively affect the source countries economic performance and growth prospect
- Decrease in human capital seriously affects the country capacity of innovation & the adoption of modern technologies
- Flight of human capital - increase of inequality at international level (rich countries becoming richer at the expenses of poor countries)
- Different taxation schemes that could compensate origin countries: Bhagwati brain drain tax

Impact of the brain drain on source countries: Optimistic view

- Monfort (1997), Stark (1997), Beine, Docquier & Rappoport (2001, 2003, 2007, 2008), Stark & Wang (2002), Docquier, Pestieau & Faye (2008)
- Range of feedback effects on source countries (remittances, return migration with additional skills acquired abroad, creation of business networks: Trade, FDI)
- Migration prospects may foster human capital formation at countries of origin
  - Expected returns to education are higher abroad than at source countries. In this context migration prospects may promote higher education in the origin ('brain gain')
  - Under uncertainty in migration perspectives only a fraction of the workers will emigrate. Consequently, the origin countries might have a higher average level of human capital
- If the 'brain gain' effect is larger enough to dominate the brain drain, then there can be a net gain for source country

Impact of the brain drain on source countries: Optimistic view

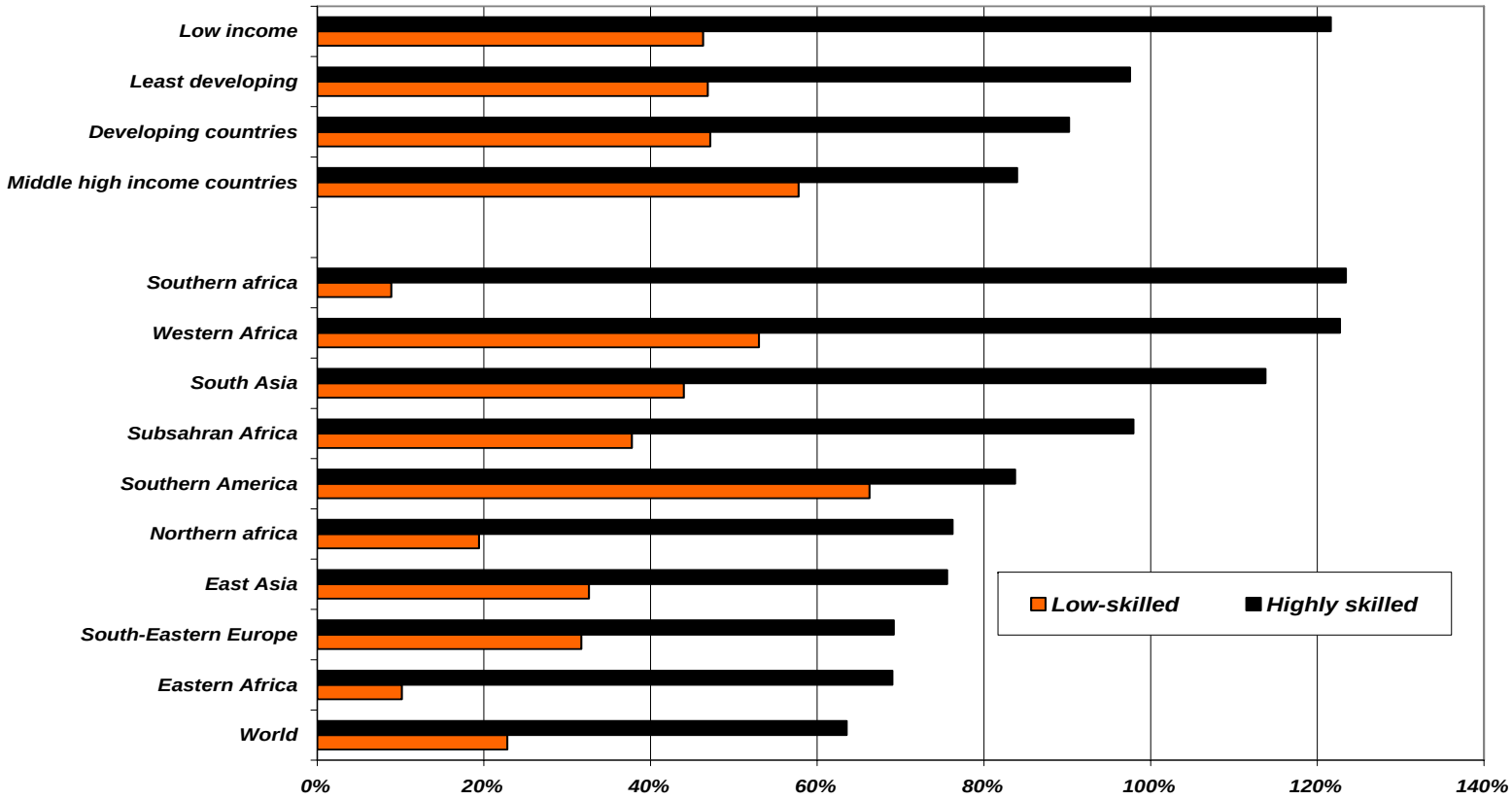
- Beine, Docquier & Rappoport (2007): tested for the brain gain hypothesis
- Brain drain induces a positive net gain for developing countries as a whole (+2.2% of tertiary graduates)
- Brain gain is obtained in large countries (China, India, Brazil, Bangladesh) combining low levels of human capital & low skilled emigration rates
- More ‘losers’ than ‘winners’
- Gains of the ‘winners’ are relatively small and exceed 1% only for six countries: Argentina (1.5%), Venezuela (1.3%), Saudi Arabia (1.2%), Mongolia (1.2%), Maldives & Libya (1.1%)
- Losses of the ‘losers’ are more important than gains of the ‘winners’

Impact of the brain drain on source countries: Optimistic view

- Ricardo Faini (2007) found no significant effect of tertiary emigration on domestic enrollement in higher education
- Maurice Schiff (2006) the brain drain effect is greatly exaggerated
- Docquier, Faye & Pestieau (2008) more pessimistic: Number of ‘winners’ countries is more limited than in the previous study: Beine, Docquier & Rappoport (2007)
- BD induces a negative effect on the total number of tertiary educated in developing countries (-2.7% of tertiary graduates)
- Further empirical research is needed before drawing definitive conclusions on the eventual positive effect of the brain drain on the human capital formation in source countries

Is the brain drain from developing countries more important today than years ago?

Low-skilled and highly skilled emigration by region of origin, variations 1990-2000, in %



Source: Docquier, Lowell & Marfouk (2007)

What should policy makers do in face of this flight of human capital from developing countries?

- Economic and non-economic considerations drive developing countries highly skilled workers emigration
- Pull factors (living standards, economic & Job opportunities, skill premium, Social welfare,…)
- Push factors (civil liberties & political rights, civil wars & armed conflicts, political instability,…)
- Source countries geographical, demographic and ‘cultural’ characteristics
  - Countries that are small islands are more affected by the brain, while the opposite holds for landlocked countries and big countries
  - On average, the brain drain is stronger in countries that are not too distant from OECD countries
  - Other things equal, the brain drain is strong in countries that share a common language with the OECD receiving countries