



# The Emerging Global Labor Market: Part II—The Supply of Offshore Talent in Services

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The Emerging Global Labor Market:

Part II—The Supply of Offshore Talent in Services



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# Synthesis

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## INTRODUCTION

The offshoring of service jobs from high-wage countries to low-wage countries is accelerating, and will have important effects on labor markets in both developed and emerging markets. But to date there has been an absence of data and hard facts around several key questions:

- What is the potential supply of labor in low-wage nations and how does it compare to the labor supply in developed economies?
- What makes a job candidate suitable or unsuitable for work in a multinational company, and how does this narrow the low-wage labor supply?
- How is talent spread across emerging markets, and which countries will supply labor for offshoring?

To provide answers to these questions, the McKinsey Global Institute quantified the supply of talent in 28 low-wage countries and 8 mid- to high-wage ones (Exhibit 1).<sup>1</sup> Our analysis covers eight occupations that could be performed remotely: engineers, finance and accounting professionals, analysts, life science researchers, doctors, nurses, and generalists. We focus mainly on

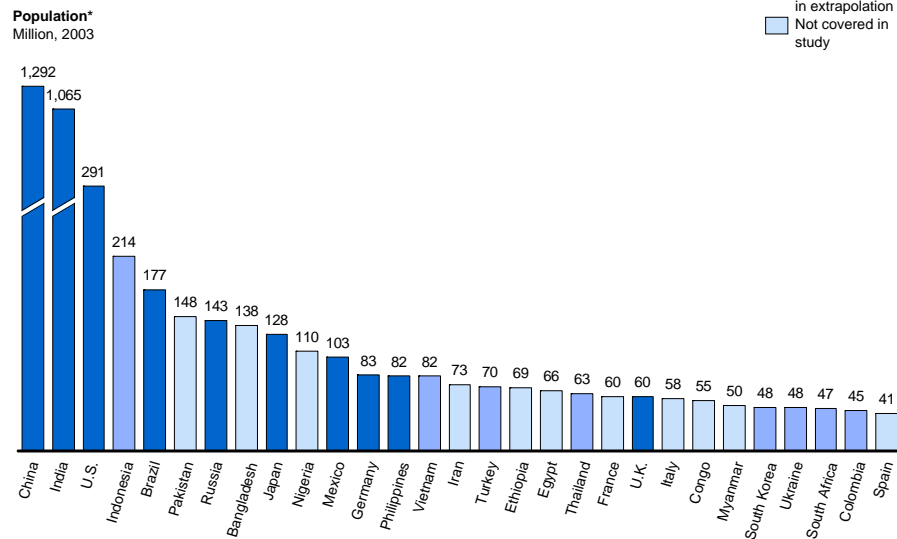
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<sup>1</sup> Mid- to high-wage countries studied in-depth were: Canada, Germany, Ireland, Japan, the United Kingdom, and the United States; Australia and South Korea were studied by way of extrapolation. Low-wage countries included in the in-depth study were: Brazil, China, Czech Republic, Hungary, India, Malaysia, Mexico, Philippines, Poland, and Russia; other low-wage countries studied were: Argentina, Bulgaria, Chile, Colombia, Croatia, Estonia, Indonesia, Latvia, Lithuania, Romania, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, and Vietnam.

young professionals with less than seven years of experience, since experienced professionals and middle managers are a more heterogeneous group and the needs of multinational companies for such workers is varied.<sup>2</sup>

### Exhibit 1

#### MOST OF THE LOW-WAGE COUNTRIES WITH HIGH POPULATION WERE EVALUATED



\* All countries with a population of  $\geq 40$  million are shown here.  
Source: Global Insight

This report presents the results of those analyses. It has important implications for how the emerging global labor market will develop, for companies in high-wage economies that seek to locate some activities offshore, and for policy makers in low-wage countries that wish to attract offshoring investment. The report is divided into four sections:

- **Potential labor supply in low-wage countries:** examines the total number and growth rate of university graduates in eight occupational categories in 28 low-wage and 8 mid- and high-wage countries.

<sup>2</sup> Our interviews also suggest that multinational companies mostly do not consider hiring experienced workers in low-wage countries because they are not considered a viable alternative to recent graduates. (This view radically changes when the need arises for extremely specialized professionals, such as nuclear physicists.) Many HR professionals thought college graduates of older age groups were much less suitable than today's graduates, especially in Eastern Europe and Russia. This is true for generalists—mainly because many more lack language abilities—as well as for specialist degree holders such as life science researchers.

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- **Factors reducing the potential labor supply in low-wage countries** discusses the reasons why the majority of university graduates in low-wage countries would not be available to work for multinational companies.
  - **Available labor supply for multinational companies** quantifies the actual, available supply of talent in low-wage countries for multinational companies, by occupation and country, given the factors discussed in the first section.
  - **Implications for companies and countries** examines what these findings mean for both multinational companies seeking to locate service functions in low-wage countries and for developing countries seeking to attract such investment.

## POTENTIAL LABOR SUPPLY IN LOW-WAGE COUNTRIES

Based on workforce size alone, the potential number of workers in low-wage countries would appear to be enormous. Around 1.8 billion people were working or looking for work in our sample of low-wage countries in 2003, and this number is growing fast (Exhibit 2).<sup>3</sup>

But sheer numbers are deceiving. Agriculture is still the largest contributor to overall employment in many developing economies (60 percent and 44 percent in India and China, respectively) (Exhibit 3). For all but one of the occupational groups that we analyzed, a college degree is a prerequisite (the exception is support staff). In developed countries, roughly one-fifth of the workforce has college degrees, while in developing countries, only 7 percent of the workforce has a university degree (Exhibit 4).

In addition, some job categories in which labor could be resourced globally, such as IT services, require specific knowledge, further narrowing the pool of potential talent for multinational companies. In India, for instance, only 4 percent of the total university-educated workforce has an engineering degree, compared to 20 percent in Germany and 33 percent in China (Exhibit 5).

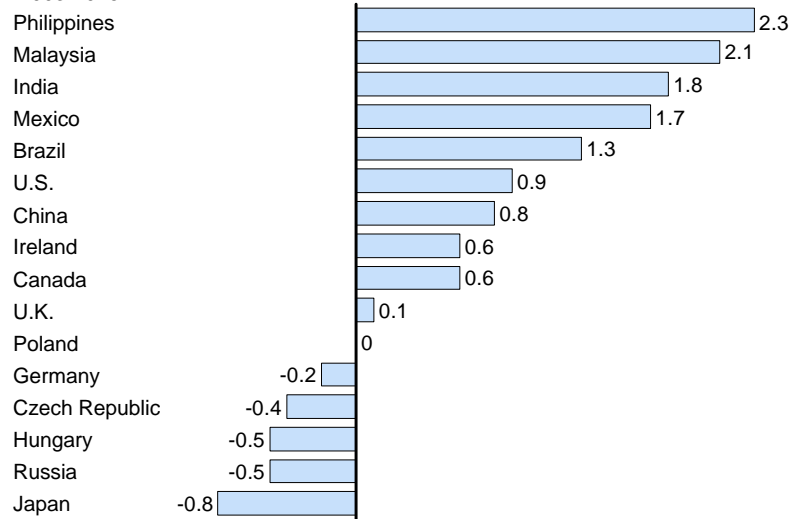
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<sup>3</sup> China is one of the countries expected to provide a large potential for low-wage labor for global resourcing, but a rigorous "one child" policy is causing its population to age rapidly. It will reach a median age of 45 by 2050—the same age as in the developed world. In absolute numbers, the number of elderly will jump to 355 million in 2030 and 450 million in 2050, up from 133 million in 2001, while the share of working-age people will shrink.

**Exhibit 2**

**DUE TO CHANGING DEMOGRAPHICS, SOME COUNTRIES WILL FACE A DECLINING WORKING AGE POPULATION**

**Projected growth of working age population**  
%, CAGR 2003-2015



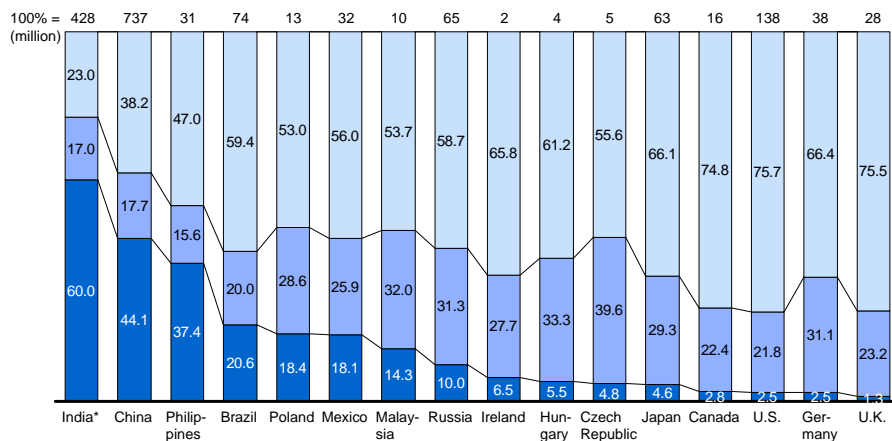
Source: Global Insight; U.S. Census Bureau

**Exhibit 3**

**IN INDIA, 60% OF EMPLOYMENT IS IN AGRICULTURE COMPARED TO ONLY 2.5% IN THE UNITED STATES**

■ Agriculture  
■ Manufacturing  
■ Services

Share of employment by economic sector  
2003



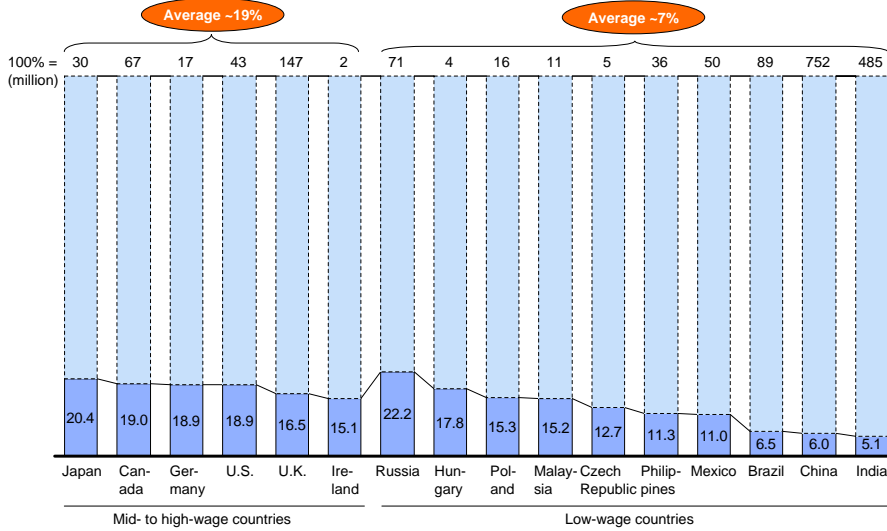
\* Shares as of 1999.

Source: International Labor Organization; Global Insight; CIA World Factbook

## Exhibit 4

### DRIVEN BY CHINA AND INDIA, ONLY ~7% OF THE WORKFORCE IN OUR LOW-WAGE COUNTRY SAMPLE HAS AT LEAST A COLLEGE DEGREE

Share of workforce with university education  
2003

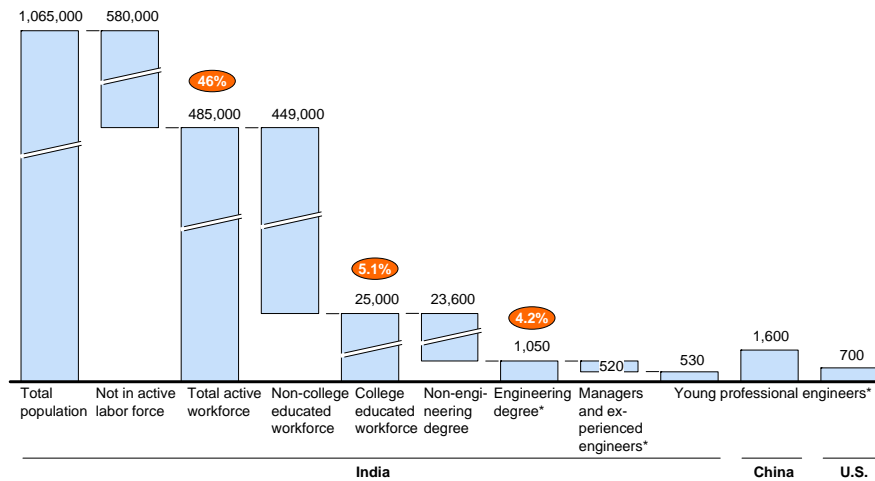


Source: Country statistical offices/labor offices; Global Insight

## Exhibit 5

### THERE IS A LARGE GAP BETWEEN MACRO-FIGURES AND OCCUPATION-SPECIFIC SUPPLY, BUT LOW-WAGE SUPPLY POTENTIAL IS STILL LARGE

Thousand, 2003



\* Including all engineering disciplines (except agricultural and civil engineering); including all IT and computer science engineers; young professionals have ≤7 years of work experience; numbers do not consider variances in talent suitability, accessibility and domestic competition for talent.  
Source: Global insight; India Ministry of Education

Still, even after taking all these factors into account, the potential supply of labor for offshoring in emerging markets is large. In our sample of 28 low-wage countries, we found that there are approximately 33 million young professionals (university graduates with up to seven years of experience). This compares to 15 million young professionals in our sample of eight higher-wage nations (United States, United Kingdom, Germany, Japan, Australia, Canada, Ireland, South Korea), and 7.7 million in the United States alone. Including support staff, doctors, and nurses, the figure rises to 392.8 million potential workers in low-wage countries, compared to 181.3 million in our sample of high-wage ones.

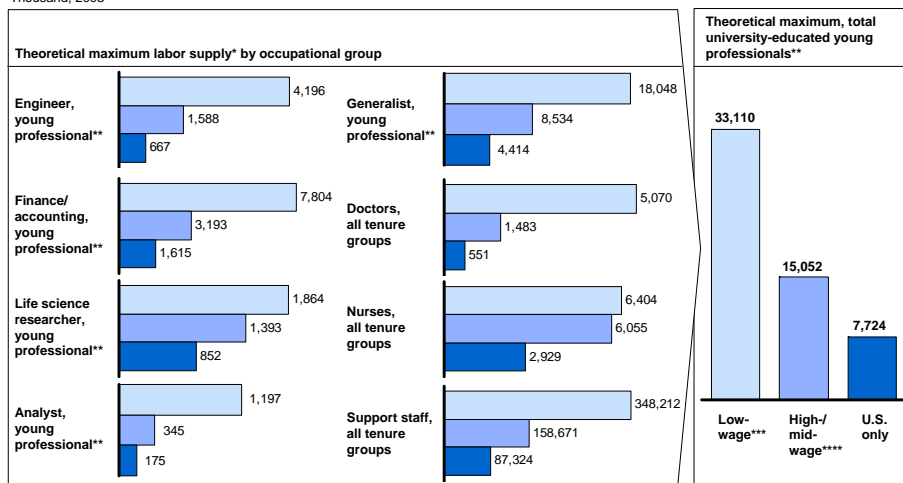
Exhibit 6 shows that this "theoretical maximum" labor supply in low-wage nations is large in all job categories. India alone has nearly as many young professional engineers as the United States, and China has more than twice as many (Exhibit 7). Russia has almost ten times as many finance/accounting professionals as Germany. China has four times the number of doctors as the United States (Exhibit 8). In terms of sheer size, China, India, Russia, and the United States dominate all job categories.

### Exhibit 6

#### CONSIDERING TALENT QUANTITY ONLY, LOW-WAGE SUPPLY POTENTIAL MARKEDLY SURPASSES HIGH-WAGE POTENTIAL

Thousand, 2003

Low-wage countries in sample\*\*\*  
High- and mid-wage countries in sample\*\*\*\*  
U.S. only

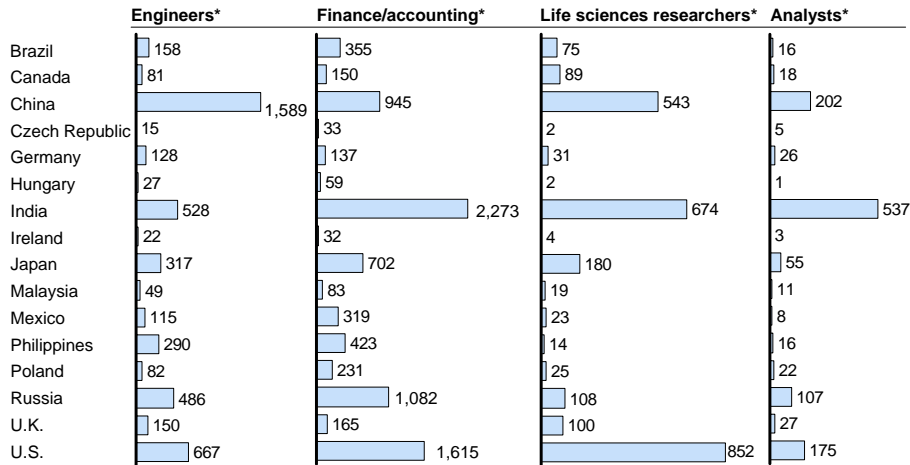


\* Not considering variances in talent suitability, accessibility, domestic competition for talent and interchangeability among groups.  
 \*\* ≤7 years of work experience.  
 \*\*\* Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.  
 \*\*\*\* Australia, Canada, Germany, Ireland, Japan, South Korea, U.K., U.S.  
 Source: Country labor & graduation statistics; McKinsey Global Institute analysis

## Exhibit 7

### CONSIDERING TALENT QUANTITY ONLY, CHINA, INDIA & U.S. DOMINATE THE WORLD'S LABOR SUPPLY IN ALL OCCUPATIONAL GROUPS (1/2)

Theoretical maximum labor supply\*\*  
Thousand, 2003



\* Young professionals only; work experience ≤7 years.

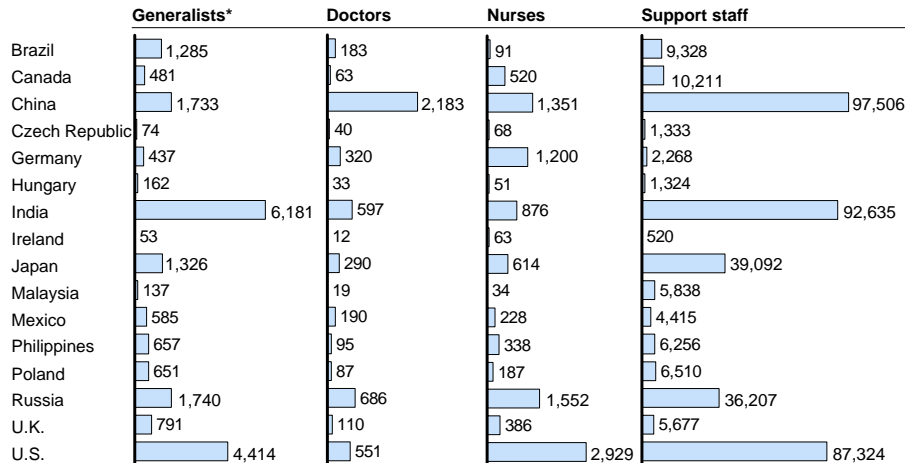
\*\* Not considering variances in talent suitability, accessibility, domestic competition for talent and interchangeability among groups.

Source: Country labor & graduation statistics; McKinsey Global Institute analysis

## Exhibit 8

### CONSIDERING TALENT QUANTITY ONLY, CHINA, INDIA & U.S. DOMINATE THE WORLD'S LABOR SUPPLY IN ALL OCCUPATIONAL GROUPS (2/2)

Theoretical maximum labor supply\*\*  
Thousand, 2003



\* Young professionals only; work experience ≤7 years

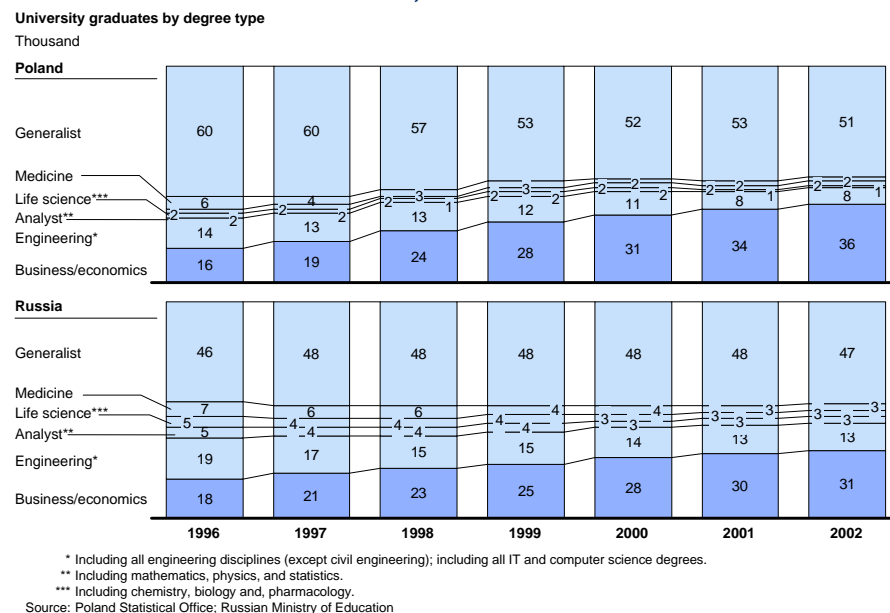
\*\* Not considering variances in talent suitability, accessibility, domestic competition for talent and interchangeability among groups.

Source: Country labor & graduation statistics; McKinsey Global Institute analysis

The number of college graduates in low-wage countries is also growing very quickly (over 5 percent annually) compared to developed economies (around 1 percent). This is particularly true in degrees for which there is high demand from multinational and domestic companies. The share of degrees awarded in business and economics jumped from 18 percent to 31 percent in Russia in just five years, and from 16 percent to 36 percent in Poland (Exhibit 9).

### Exhibit 9

#### SHARE OF BUSINESS/ECONOMICS GRADUATES IN POLAND AND RUSSIA HAS SEEN EXPLOSIVE GROWTH; ANALYSTS AND ENGINEERS DECLINED



#### THREE FACTORS REDUCE THE POTENTIAL LABOR SUPPLY

Although the potential supply of talent in low-wage countries is large and growing rapidly, only a small fraction of potential job candidates could successfully work at a multinational company. The reasons are limited suitability, lack of accessibility, and domestic competition for talent.

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### Limited suitability

Interviews with 83 human resource managers in multinational companies<sup>4</sup> reveal that on average, only 13 percent of university graduates in low-wage nations are suitable to work for a multinational company. This share rises to 19 percent when taking into account the possibility that an engineering graduate—while potentially unsuitable for an engineering position—might still be suitable to perform a generalist function.<sup>5</sup>

The portion of job candidates that are suitable varies across occupations. The generalist category, which includes call-center employees and administrative support staff, requires very good language skills and has the lowest suitability rates. Specialist occupations, such as engineers and finance and accounting professionals, are more suitable, with the average being 17 percent and 19 percent, respectively. Engineers require fewer English language skills (apart from the team leader who must communicate with headquarters), and they generally have better English skills anyway because engineering courses in many countries are taught primarily in English (Exhibit 10).

Suitability rates also vary by country. Candidates from Eastern Europe had the highest suitability rates across all occupations. The human resource experts we interviewed said they would see no issue with employing half of the engineering graduates from Czech universities, as compared to only 25 percent in India or 13 percent in Brazil. Russia and China ranked lower on suitability. In engineering, only 10 percent of Russian and Chinese candidates would be suitable to work for a multinational (Exhibits 11 and 12).

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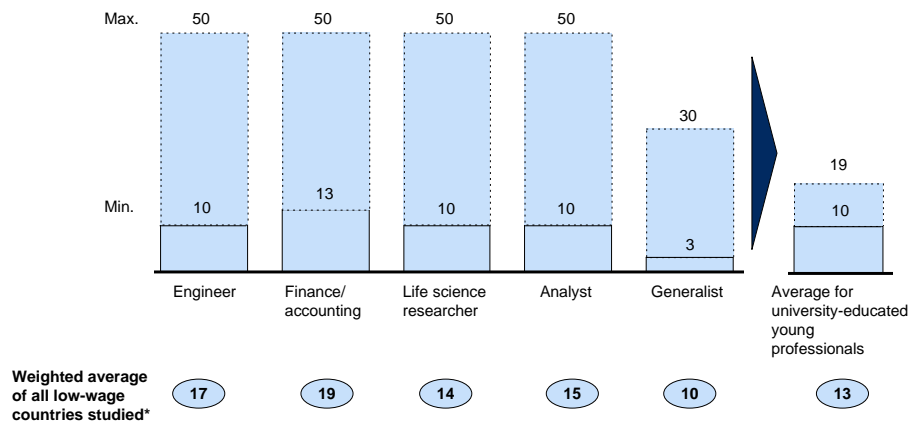
<sup>4</sup> We conducted 83 interviews with HR managers at multinational companies, HR agencies primarily supplying MNCs as well as heads of remote centers in each country. For each occupational group, we asked a quantitative question ("Of 100 random candidates with the correct degree, how many could you employ if you had sufficient demand for all 100?") and a qualitative question ("What are the main deficiencies of the candidates you turned away?"). Answers to both questions were surprisingly homogeneous across interviewees in most of the countries.

<sup>5</sup> For an in-depth discussion of the interchangeability concept, as well as the methodology and assumptions we applied, please refer to the Technical Notes of this report.

## Exhibit 10

### IN LOW-WAGE COUNTRIES, ON AVERAGE ONLY 13% OF UNIVERSITY GRADUATES ARE SUITABLE TO WORK IN A MULTINATIONAL COMPANY

"Of 100 graduates with the correct degree, how many could you employ if you had demand for all?"  
%



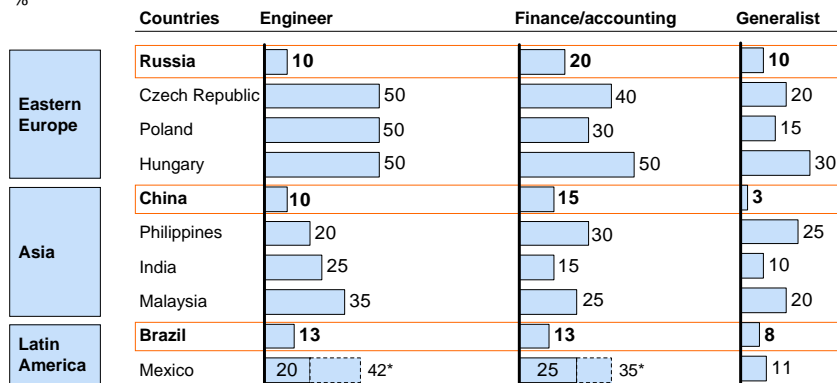
\* Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Russia, Romania, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

Source: Interviews with HR managers, HR agencies and heads of global resourcing centers; McKinsey Global Institute analysis

## Exhibit 11

### SUITABILITY VARIES MARKEDLY BETWEEN COUNTRIES AND SEEMS ESPECIALLY LOW IN NASCENT GLOBAL RESOURCING MARKETS (1/2)

"Of 100 graduates with the correct degree, how many could you employ if you had demand for all?"  
%



- All suitability rates are empirically based on a total of 83 interviews with HR professionals working in each country
- Only for doctors and nurses, same suitability rate than for life science researchers was assumed due to a lack of interviews

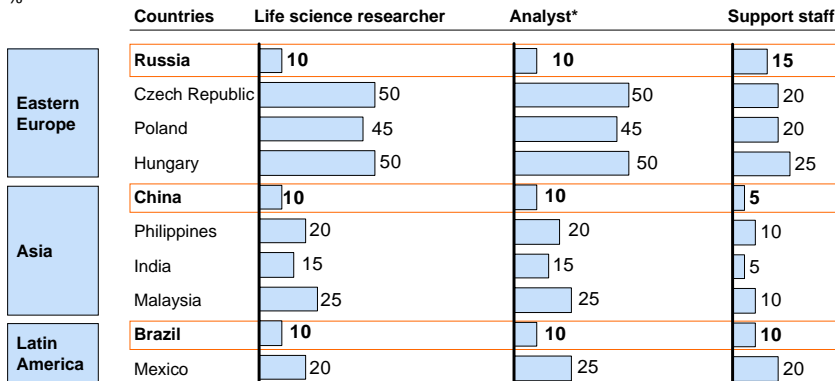
\* Mexico is the only country where interview results (higher number) were adjusted since interview base was thinner and risk of misunderstanding high.

Source: Interviews with HR managers, HR agencies, and heads of global resourcing centers; McKinsey Global Institute analysis

## Exhibit 12

### SUITABILITY VARIES MARKEDLY BETWEEN COUNTRIES AND SEEMS ESPECIALLY LOW IN NASCENT GLOBAL RESOURCING MARKETS (2/2)

"Of 100 graduates with the correct degree, how many could you employ if you had demand for all?"  
%



- All suitability rates are empirically based on a total of 83 interviews with HR professionals working in each country
- Only for doctors and nurses, same suitability rate than for life science researchers was assumed due to a lack of interviews

\* Used engineers as proxy in some cases.

Source: Interviews with HR managers, HR agencies, and heads of global resourcing centers; McKinsey Global Institute analysis

Three factors limit the suitability of job candidates in low-wage nations:

- **Language proficiency**

A recurring theme across all low-wage countries was the lack of English-language proficiency, particularly for generalists who need to work closely with the home office and customers. Language barriers are especially prevalent in China and Brazil. But even though English is the official language in India, not every graduate there has good enough English to work for a multinational company. Graduates from Southern India particularly suffer from accent issues, and there have been examples of call centers being relocated from India to the Philippines due to low customer satisfaction ratings.

Many European and Japanese companies, of course, require different foreign language skills. European companies therefore look toward Eastern Europe, where the share of German-speaking graduates can be as high as the number of English-speaking ones (French is much less common) (Exhibit 13). Japanese companies look to northeastern China for offshore labor when Japanese language abilities are important.

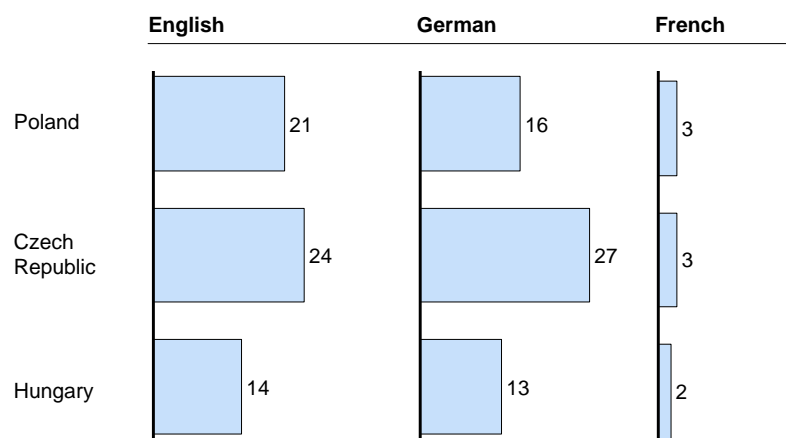
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### Exhibit 13

#### THE SHARE OF GERMAN VS. ENGLISH LANGUAGE SPEAKERS IN EASTERN EUROPE SEEMS FAIRLY EQUAL

Share of population who can carry out a conversation in a foreign language\*

%



\* Across all occupations and age groups; language ability for recent university graduates higher.  
Source: European Commission, 1999

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Interviewees report that many companies underestimate the level of language training required of their offshore workers. "They think that three hundred words of German are sufficient to handle an invoice, which is clearly wrong," said one HR expert we spoke to.

- **Educational system**

The quality of a country's educational system also affects the suitability of offshore talent. Eastern European job candidates were given high marks in this aspect, and many interviewees said their education rivals that in western Europe and the United States. Brazilian graduates were seen as especially strong in engineering. Russian and Chinese graduates are held back by the theoretical nature of their education, even though they are praised for being able to grasp new concepts very quickly.

In India, graduates from the top schools rank excellently but there is a steep decline in quality beyond the top-tier schools. "Many so-called 'degrees' just do not have the right fundamental education behind them," one interviewee said. This wide variance in the quality of universities explains why the

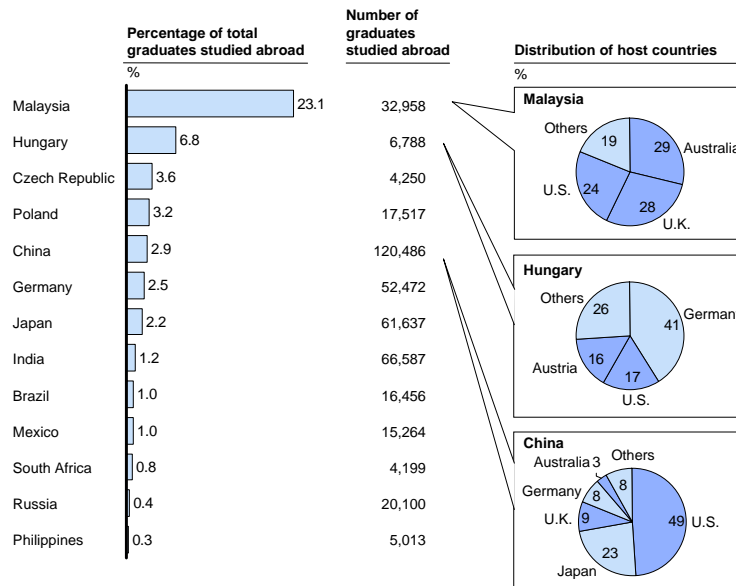
average suitability rate for Indian engineers is only 25 percent. High emigration rates further depressed the high-quality supply of suitable graduates from top schools.

Similarly, a talent perception problem regarding the quality of the Philippines' educational system limits its ability to attract specialist offshoring beyond call centers. In Malaysia, more than 20 percent of all graduates have studied abroad, mostly in the United States, United Kingdom, and Australia, which raises suitability (Exhibit 14).

**Exhibit 14**

**MALAYSIA IS DISTINCTIVE WITH ITS HIGH PERCENTAGE OF GRADUATES HAVING STUDIED ABROAD**

English speaking countries



Source: Atlas of student mobility, 2003

• **Cultural issues**

The potentially large cultural distance between applicants from low-wage countries and multinational employers is often underestimated, and can be seen in interpersonal skills, attitudes toward teamwork, flexibility in working hours, and ability to work with a hierarchical management structure. "Many find the working hours and the competitive environment in a multinational company shocking," said one expert we interviewed.

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Hiring managers generally saw a stronger cultural fit in countries which have close, historical links with the home countries of many multinational companies, such as the Czech Republic with Germany or the Philippines with the United States. Our interviewees uniformly praised the cultural fit and favorable work ethics of Indian workers: "They have an American attitude toward work," said one person. Cultural differences are more prevalent in Malaysia and China.

Job candidates from Eastern Europe sometimes suffer from a different problem: inflated expectations, fueled in part by the offshoring boom over the last 15 years. Part of the problem seems to have been a failure of multinationals to communicate work content clearly and honestly. Many companies recruited top talent with superior skills in finance and accounting and provided them with only limited responsibilities and career options.

#### **Lack of accessibility**

The pool of potential talent in low-wage nations is further diminished by the fact that many university graduates are not geographically accessible to a multinational. We estimate that only 45 percent to 80 percent of all graduates are currently accessible for multinational companies to hire.<sup>6</sup> Two factors limit accessibility: dispersion of the labor supply and mobility. These play different roles in each country, although Indian workers rank well in both categories (Exhibit 15).

Chinese graduates are most dispersed across the country. In 2003, the 1.7 million college graduates in China had studied at 1,683 colleges and universities and only 30 percent studied in one of the top ten university cities (Exhibit 16). Only 25 percent of Chinese graduates lived in a city or region close to a major international airport, a key requirement for most multinational companies to set up offshore facilities. Given that some graduates would be willing to move, roughly half of China's graduates are accessible (Exhibit 17).

In Russia, more than a quarter of Russian graduates studied in the Moscow and St. Petersburg regions alone. Still, across the country, only 33 percent of Russian

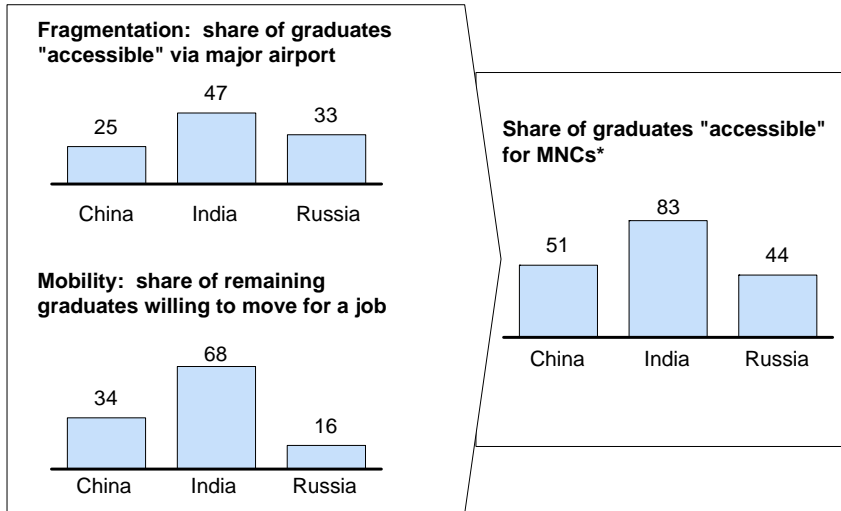
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<sup>6</sup> This analysis is based on the three largest countries: China, India, and Russia.

**Exhibit 15**

**RUSSIAN UNIVERSITY GRADUATES ARE LESS FRAGMENTED, BUT ALSO LESS MOBILE THAN CHINESE ONES, INDIA'S ARE MOST "ACCESSIBLE"**

%



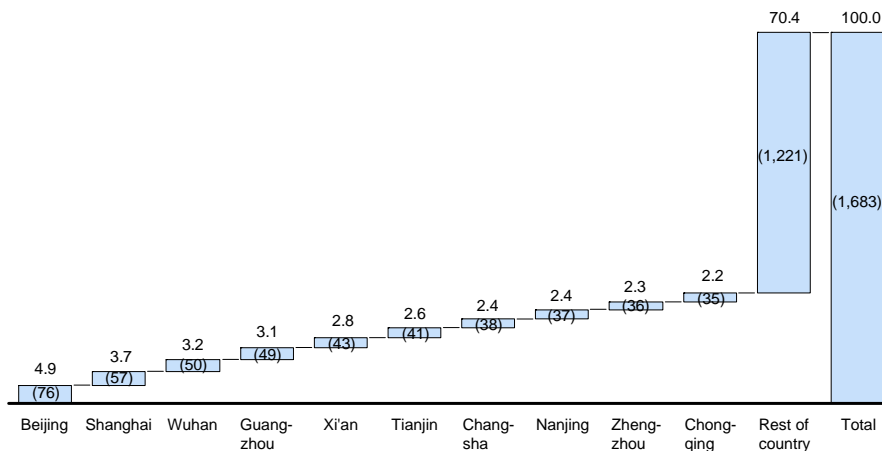
\* Accessible graduates = Graduates who studied close to a major international airport + (Remaining graduates x Empirical mobility rate)

Source: Country labor & graduation statistics; surveys on student mobility; McKinsey Global Institute analysis

**Exhibit 16**

**GRADUATES IN CHINA ARE VERY FRAGMENTED ACROSS 1,683 UNIVERSITIES AND COLLEGES**

Share of graduates by city/(number of universities and colleges)  
2003



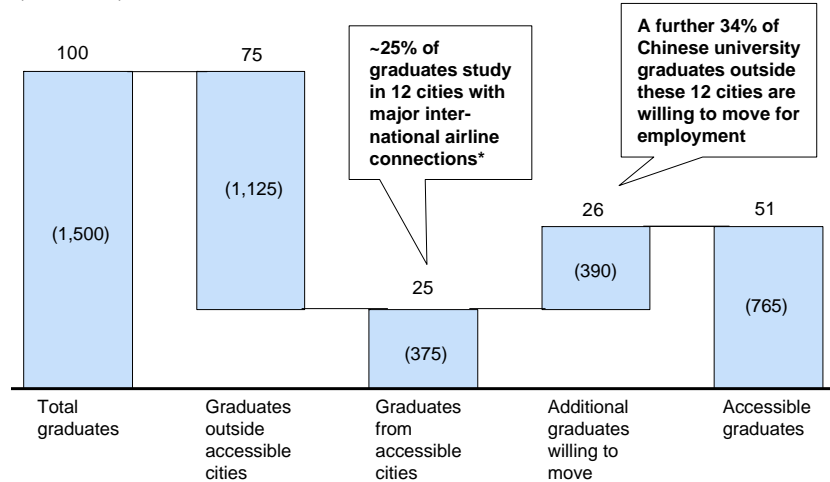
\* Share of graduates by city was approximated based on the city's population and its share of colleges.

Source: China Ministry of Education

**Exhibit 17**

**APPROXIMATELY HALF OF CHINA'S UNIVERSITY GRADUATES ARE CURRENTLY ACCESSIBLE BY MNCs**

**University graduates**  
%, (Thousand), 2003



\* Beijing, Shanghai, Guangzhou, Xi'an, Nanjing, Chongqing, Harbin, Kunming, Dalian, Qingdao, Xiamen, Shenzhen.

Source: Institute of Education Economics, Beijing University

graduates studied close to a major international airport. Almost half of Indian students graduated close to a major international hub, such as Mumbai, Delhi, Bangalore, or Hyderabad.

Indian graduates are the most mobile, both nationally and internationally. By contrast, Russian graduates outside Moscow and St. Petersburg mostly prefer to work in their university or native city, rather than to move for employment (Exhibit 18).<sup>7</sup>

**Competition for talent from non-offshoring companies**

Finally, the potential labor supply in emerging markets is reduced because some suitable job candidates will choose to work for companies serving the domestic market, whether they are nationally owned, foreign multinationals, or foreign joint ventures. This is especially true for China. The employment demand from multinational companies is growing rapidly, while successful domestic companies, such as Lenovo, Haier, or TCL, are increasingly attractive options for

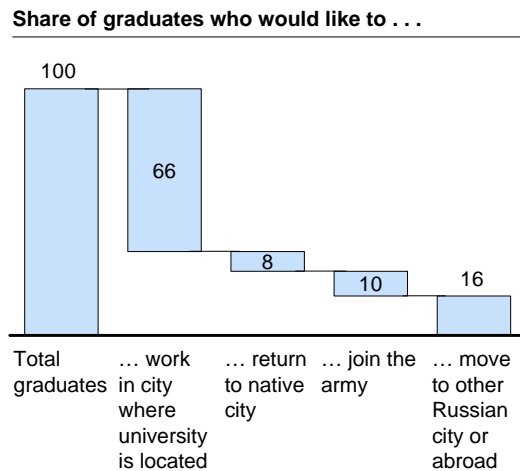
<sup>7</sup> Two similar surveys among graduates were used to determine mobility assessments for China and India.

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**Exhibit 18**

**APPROXIMATELY 6% OF RUSSIAN GRADUATES OUTSIDE MOSCOW AND ST. PETERSBURG ARE WILLING TO MOVE FOR A JOB**

%, 2003



\* Average of survey results from Ekaterinburg, Smolensk, and Ufa.  
Source: Demoscope weekly, 2003, No. 19

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the same high-quality talent pool. We estimate that half of the suitable, accessible labor pool in China is choosing to work at multinationals and domestic companies that do not serve offshoring demand instead of an offshoring multinational (Exhibit 19).

In coming years, this will create a shortage of labor for firms seeking to set up offshoring operations in China. In 2002, large foreign-owned companies and foreign-Chinese joint ventures employed 2.7 million people in China, and employment grew annually at 12 percent and 23 percent, respectively, from 1998 to 2002 (Exhibit 20).<sup>8</sup> If these growth rates persist, multinationals and joint ventures in China alone will need an additional 750,000 university graduates from 2003 to 2008 (Exhibit 21)—nearly three-quarters of the 1.1 million suitable graduates that our labor supply model predicts China will produce over the same period. Excluding workers who live outside the areas of peak demand, the supply of suitable graduates will barely meet multinational demand alone (Exhibit 22).

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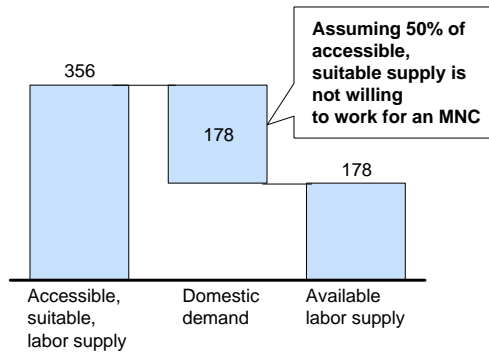
<sup>8</sup> We only considered companies with greater than one thousand employees. Foreign-owned companies from Macao, Taiwan, and Hong Kong were excluded as well.

**Exhibit 19**

**DOMESTIC LABOR DEMAND IN CHINA COULD HAVE AN ADDITIONAL IMPACT ON SUITABLE, ACCESSIBLE LOW-WAGE SUPPLY**

Impact of domestic competition on accessible, suitable, low-wage labor supply  
Thousand, 2003

University-educated young professionals\*, China

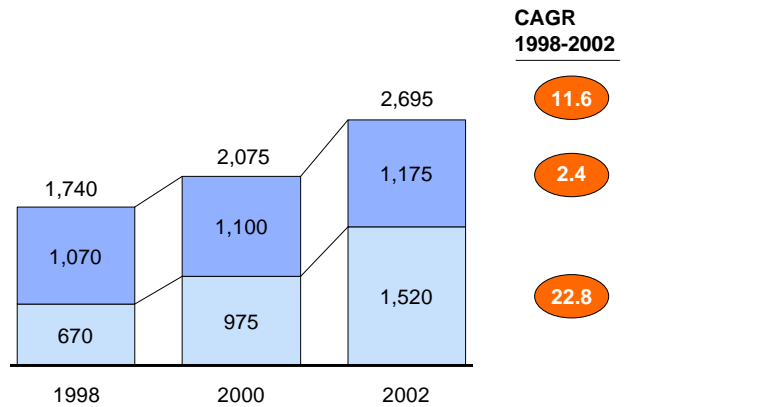


\* Engineers, finance/accounting, analysts, life science researchers, generalists; work experience ≤7 years.  
Source: HR interviews; country labor & graduation statistics; McKinsey Global Institute analysis

**Exhibit 20**

**EMPLOYMENT IN LARGE MULTINATIONAL COMPANIES IN CHINA GREW MARKEDLY SINCE 1998, IN NON-JOINT VENTURES EVEN BY ~23% PER YEAR**

Employment in large multinational companies in China\*  
Thousand

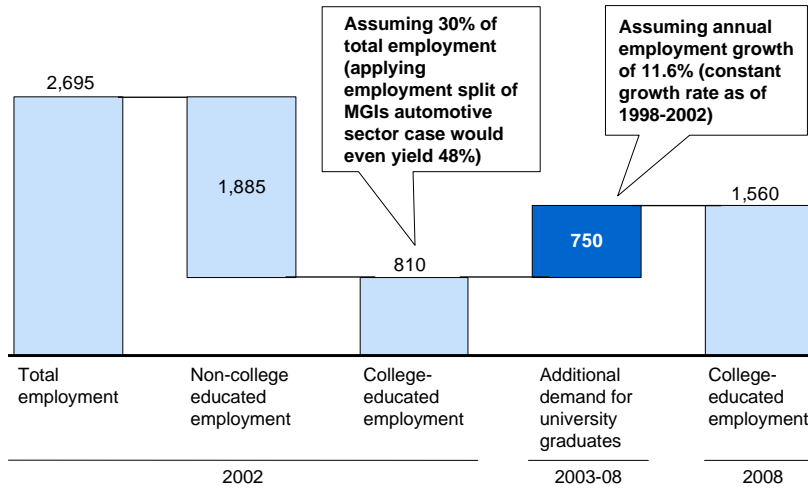


\* Enterprises with revenue over \$ 604,000 in 2002 and employment of >1,000 FTEs; excluding employment in Hong Kong/Macao/Taiwan owned enterprises.  
Source: China statistical yearbook

## Exhibit 21

### THESE LARGE MNCs IN CHINA, MOSTLY ACTIVE IN MANUFACTURING, WILL DEMAND ADDITIONAL UNIVERSITY GRADUATES FROM 2003-08

Employment in large multinational companies in China\*  
Thousand

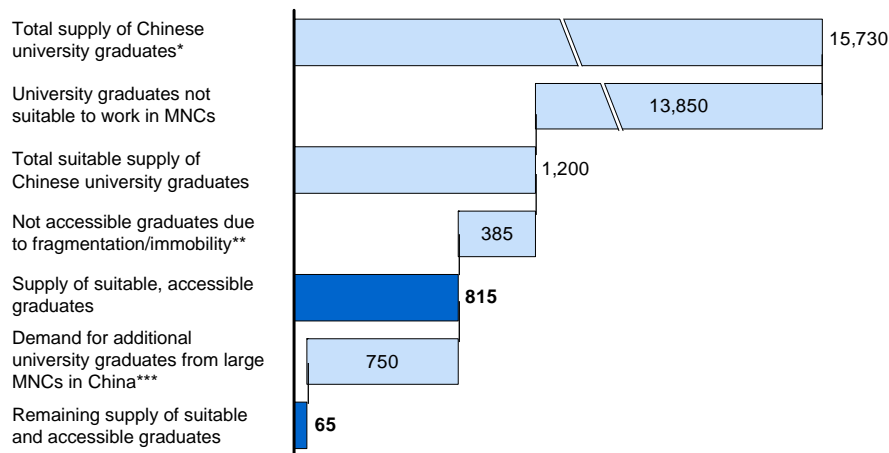


\* Enterprises with revenue over \$ 604,000 in 2002 and employment of >1,000 FTEs; excluding employment in Hong Kong/Macao/Taiwan owned enterprises.  
Source: China statistical yearbook; McKinsey Global Institute analysis

## Exhibit 22

### SUITABLE SUPPLY OF UNIVERSITY GRADUATES WILL BE BARELY ENOUGH TO SUFFICE DEMAND OF LARGE MNCs IN CHINA

Thousand; 2003-2008



\* All university courses except doctors.

\*\* Assuming strong growth of accessibility from currently 51% to 83% in 2008 (India's current level).

\*\*\* Enterprises with revenue over \$ 604,000 in 2002 and employment of >1,000 FTEs; excluding employment in Hong Kong/ Macao/Taiwan owned enterprises.

Source: McKinsey Global Institute labor supply database

## THE AVAILABLE TALENT POOL FOR MULTINATIONAL COMPANIES IS LARGE AND GROWING

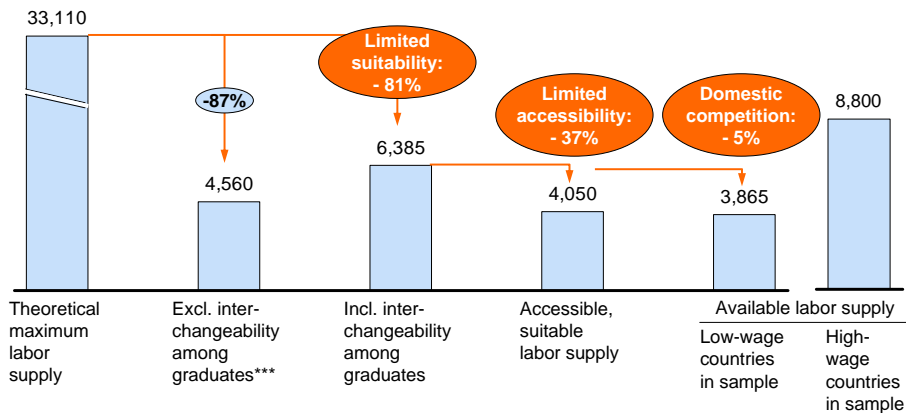
Taking into account these three factors—suitability, accessibility, and competition from other non-offshoring companies—dramatically reduces the pool of talent available for multinational employment, but it is still large and it is growing quickly. While there are 33 million potential young professionals in emerging markets, 4.6 million are suitable to work for a foreign company. If we include the fact that some professionals unsuitable for positions in their occupations might be suitable for generalist positions (interchangeability), suitable supply increases to 6.4 million. Lack of accessibility and competition from non-offshoring employers reduces these pools further still (Exhibit 23). Altogether, we estimate that 2.8 to 3.9 million—or 8 to 12 percent—of the young professionals in low-wage countries are available for hire by export-oriented service offshoring companies. This compares to 8.8 million in our sample of high-wage countries.

### Exhibit 23

#### SUITABILITY HAS THE STRONGEST IMPACT ON AVAILABLE, UNIVERSITY-EDUCATED LABOR SUPPLY FROM LOW-WAGE COUNTRIES

LOWER BOUNDARY ESTIMATE  
PARTLY ASSUMPTIONS

University-educated young professionals\*, all low-wage countries in sample\*\*  
Thousand, 2003



\* Engineers, finance/accounting, analysts, life science researchers, generalists; ≤7 years of work experience.

\*\* Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

\*\*\* interchangeability refers to (i) unsuitable engineering/life science/finance graduates can still work as analysts when fulfilling suitability criteria of this group or (ii) all unsuitable graduates can still work as generalist when fulfilling suitability criteria of this group.

Source: HR interviews; country labor & graduation statistics; surveys on student mobility; McKinsey Global Institute analysis

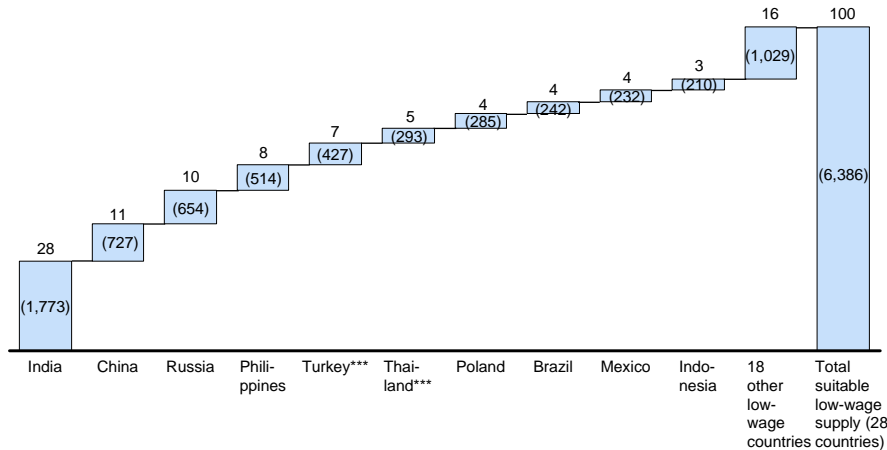
This is a lower boundary estimate, however, of the available labor supply in low-wage countries. In reality, the most suitable job candidates are also likely to be the most mobile and to have studied in a major city. Because of this, we focus on the suitable supply of labor (ignoring accessibility) below.

In both absolute and relative terms, 6.4 million is a large pool of talent available for offshoring. In some occupations, such as engineers, finance and accounting, and analysts, it is 75 percent or more of the suitable pool of labor in our sample of high-wage countries. Given their sheer size, India and China dominate the low-wage labor supply in many occupations. India accounts for nearly 30 percent of the suitable young professionals,<sup>9</sup> for instance, while China and Russia have 11 percent and 10 percent, respectively (Exhibit 24).

## Exhibit 24

### INDIA IS DOMINATING SUITABLE, LOW-WAGE SUPPLY; REMAINING SUPPLY IS FRAGMENTED AMONG MANY COUNTRIES

Suitable quantity\*, total university-educated young professionals\*\*  
%, (Thousand), 2003



\* Accessibility and willingness of talent are tackled as sensitivity issues and are not included here.

\*\* Engineers, finance/accounting, analysts, life science researchers, generalists; ≤7 years of work experience.

\*\*\* Number derived via extrapolation.

Source: HR interviews; Country labor & graduation statistics; McKinsey Global Institute analysis

<sup>9</sup> This includes engineers, finance and accounting, analysts, life science researchers, and professional generalists with less than seven years of experience. It excludes three occupations: doctors, nurses, and support staff.

The suitable supply of labor varies by occupation and country (Exhibits 25 to 32). Several findings stand out. Given that some unsuitable engineers might be suitable as analysts, the supply of analysts in low-wage countries today is already twice as large as that in our high-wage sample. Low-wage nations today also have large pools of suitable, available engineers and finance and accounting professionals. They have a relatively small supply of available life science researchers (the United States alone accounts for 70 percent of the supply in this category) and nurses. Both high-wage and low-wage nations have many suitable support staff workers. In addition, these exhibits make clear that the available pool of talent is dispersed across many countries.

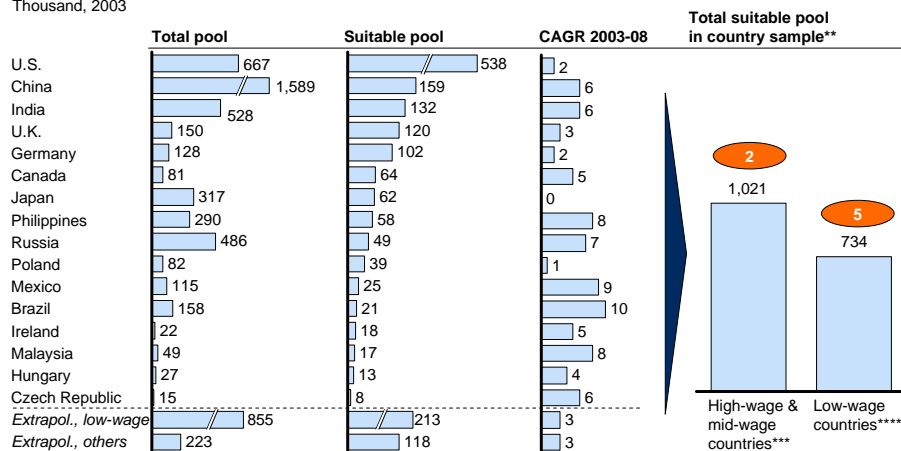
### Exhibit 25

#### INDIA AND CHINA TOGETHER HAVE MORE THAN HALF THE U.S. SUPPLY OF SUITABLE ENGINEERS; LOW-WAGE COUNTRIES ARE GROWING FAST

CAGR 2003-2008

Engineers, young professionals\*

Thousand, 2003



\* University degree in engineering (except civil and agriculture) and computer science/IT; ≤7 years of work experience.

\*\* Sample includes 36 developed and developing countries, covering 74% of worldwide non-agricultural labor supply.

\*\*\* Australia, Canada, Germany, Ireland, Japan, South Korea, U.K., U.S.

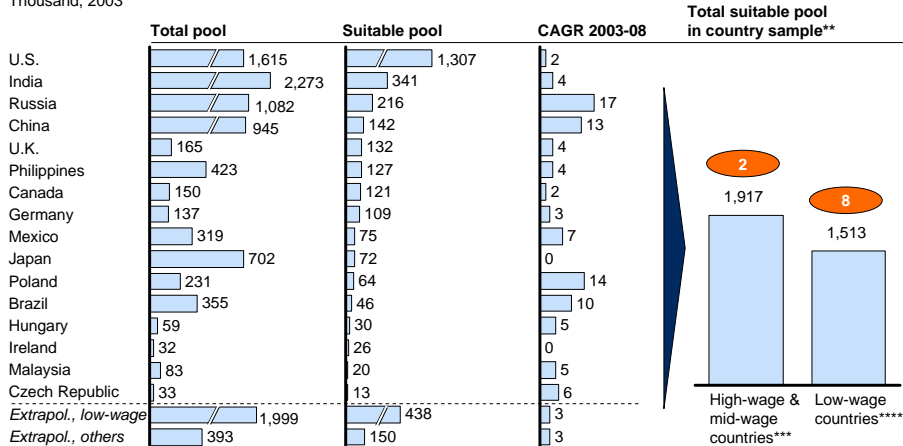
\*\*\*\* Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

Source: HR interviews; Country labor & graduation statistics; McKinsey Global Institute analysis

## Exhibit 26

### THE U.S. HAS BY FAR THE MOST FINANCE/ ACCOUNTING PROFESSIONALS; RUSSIA, CHINA, AND POLAND ARE GROWING RAPIDLY CAGR 2003-2008

Finance/accounting, young professionals\*  
Thousand, 2003



\* University degree in finance, accounting, economics, business; ≤7 years of work experience.

\*\* Sample includes 36 developed and developing countries, covering 74% of worldwide non-agricultural labor supply.

\*\*\* Australia, Canada, Germany, Ireland, Japan, South Korea, U.K., U.S.

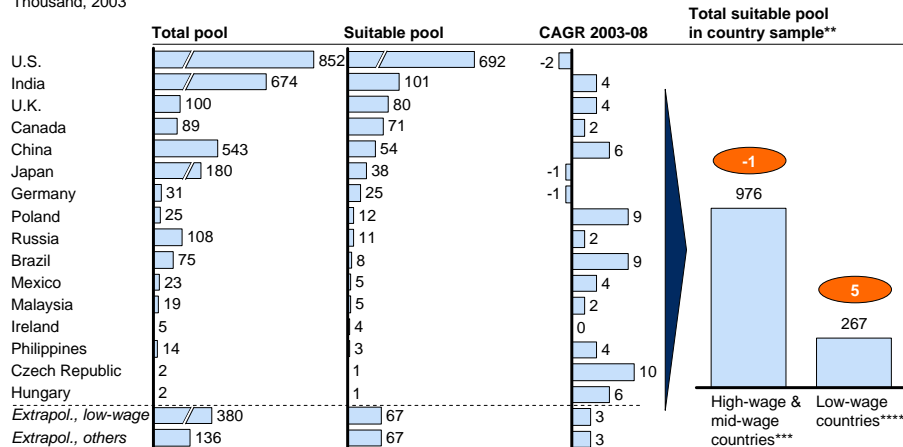
\*\*\*\* Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

Source: HR interviews; Country labor & graduation statistics; McKinsey Global Institute analysis

## Exhibit 27

### THE U.S. HAS BY FAR THE MOST LIFE SCIENCE RESEARCHERS, BUT SUPPLY IS SHRINKING IN HIGH-WAGE COUNTRIES CAGR 2003-2008

Life science researchers, young professionals\*  
Thousand, 2003



\* University degree in biology, chemistry or pharmacology; ≤7 years of work experience.

\*\* Sample includes 36 developed and developing countries, covering 74% of worldwide non-agricultural labor supply.

\*\*\* Australia, Canada, Germany, Ireland, Japan, South Korea, U.K., U.S.


\*\*\*\* Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

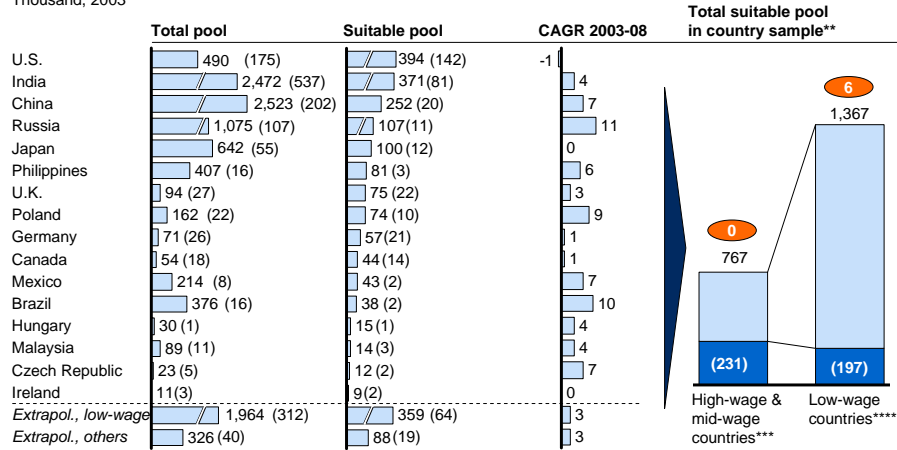
Source: HR interviews; Country labor & graduation statistics; McKinsey Global Institute analysis

## Exhibit 28

### INDIA HAS ALMOST AS MANY SUITABLE ANALYSTS AS THE U.S.; POLAND HAS MORE THAN GERMANY

Analysts, young professionals\*  
Thousand, 2003

(X) = Pure analyst degree holders, not accounting for interchangeability  
 CAGR 2003-2008



\* University degree in mathematics, physics, statistics plus some candidates unsuitable for engineering, finance, and life sciences to account for interchangeability; ≤7 years of work experience.

\*\* Sample includes 36 developed and developing countries, covering 74% of worldwide non-agricultural labor supply.

\*\*\* Australia, Canada, Germany, Ireland, Japan, South Korea, U.K., U.S.


\*\*\*\* Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

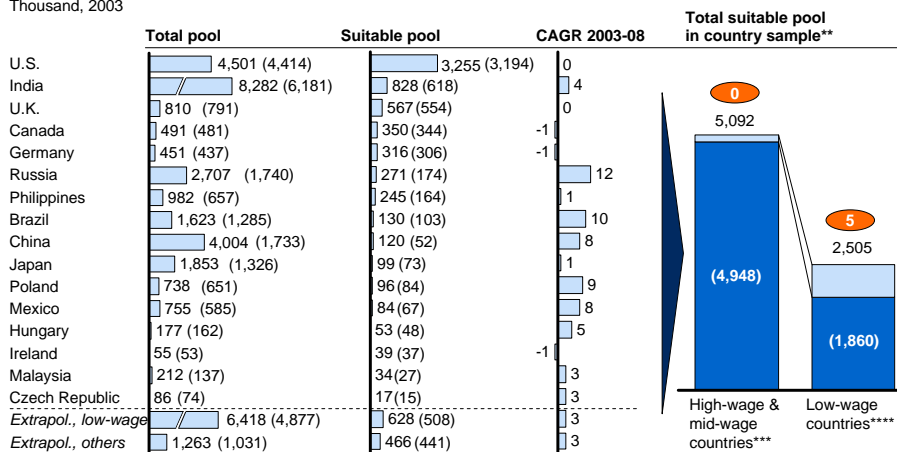
Source: HR interviews; Country labor & graduation statistics; McKinsey Global Institute analysis

## Exhibit 29

### RUSSIA HAS MORE SUITABLE GENERALISTS THAN THE PHILIPPINES AND IS GROWING STRONG

Generalists, young professionals\*  
Thousand, 2003

(X) = Pure analyst degree holders, not accounting for interchangeability  
 CAGR 2003-2008



\* University degree in any non-specialist field (e.g., sociology) plus some candidates unsuitable for engineering, finance, and life sciences, to account for interchangeability; ≤7 years of work experience.

\*\* Sample includes 36 developed and developing countries, covering 74% of worldwide non-agricultural labor supply.

\*\*\* Australia, Canada, Germany, Ireland, Japan, South Korea, U.K., U.S.

\*\*\*\* Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

Source: HR interviews; Country labor & graduation statistics; McKinsey Global Institute analysis

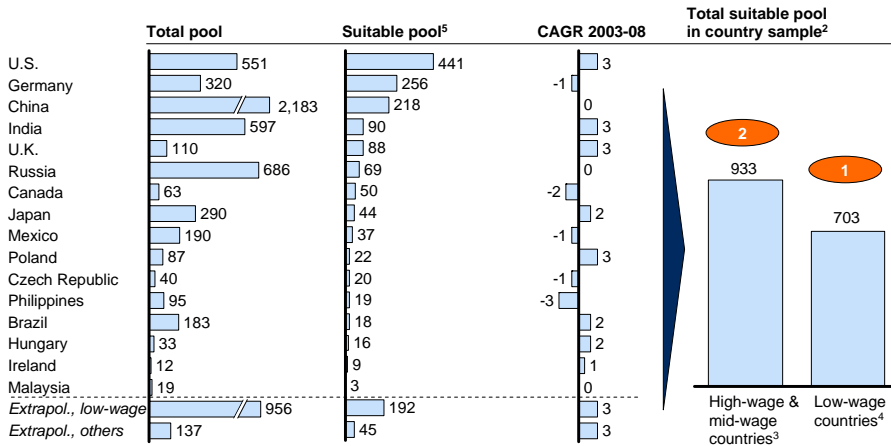
## Exhibit 30

### CHINA HAS MORE THAN TWICE THE NUMBER OF SUITABLE DOCTORS AS INDIA

CAGR 2003-2008

Doctors<sup>1</sup>

Thousand, 2003



<sup>1</sup> Registered medical doctors, no dentists.

<sup>2</sup> Sample includes 36 developed and developing countries, covering 74% of worldwide non-agricultural labor supply.

<sup>3</sup> Australia, Canada, Germany, Ireland, Japan, South Korea, U.K., U.S.

<sup>4</sup> Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico,

Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

<sup>5</sup> For doctors and nurses, the suitability of life science researchers has been assumed due to lack of interviews on these two occupations.

Source: HR interviews; Country labor & graduation statistics; McKinsey Global Institute analysis

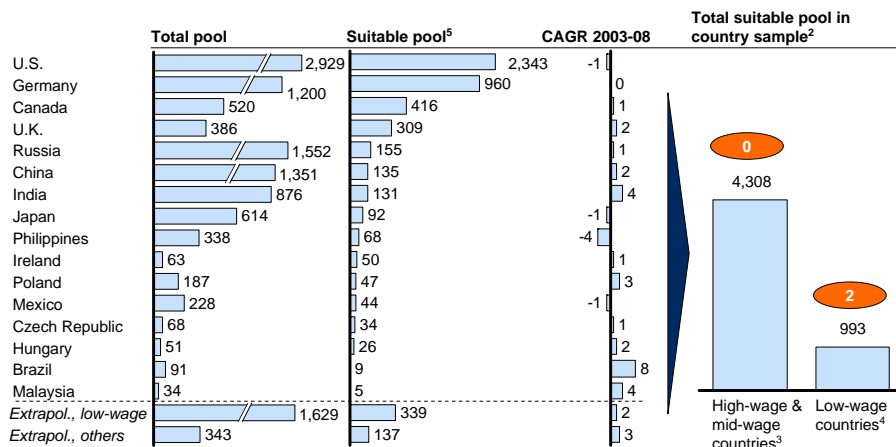
## Exhibit 31

### LOW-WAGE COUNTRIES HAVE MUCH FEWER SUITABLE NURSES THAN HIGH-WAGE COUNTRIES

CAGR 2003-2008

Nurses<sup>1</sup>

Thousand, 2003



<sup>1</sup> Registered nurses.

<sup>2</sup> Sample includes 36 developed and developing countries, covering 74% of worldwide non-agricultural labor supply.

<sup>3</sup> Australia, Canada, Germany, Ireland, Japan, South Korea, U.K., U.S.

<sup>4</sup> Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico,

Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

<sup>5</sup> For doctors and nurses, the suitability of life science researchers has been assumed due to lack of interviews on these two occupations.

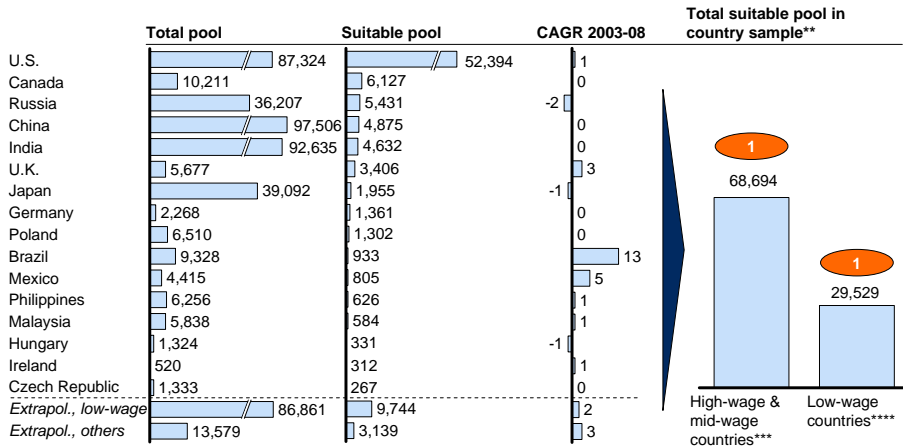
Source: HR interviews; Country labor & graduation statistics; McKinsey Global Institute analysis

**Exhibit 32**

**SUPPLY IN SUPPORT STAFF IS ABUNDANT IN HIGH- AS WELL AS LOW-WAGE COUNTRIES**

**X** CAGR 2003-2008

Support staff, young professionals\*  
Thousand, 2003



\* High-school degree; any work experience.  
 \*\* Sample includes 36 developed and developing countries, covering 74% of worldwide non-agricultural labor supply.  
 \*\*\* Australia, Canada, Germany, Ireland, Japan, South Korea, U.K., U.S.  
 \*\*\*\* Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.  
 Source: HR interviews; Country labor & graduation statistics; McKinsey Global Institute analysis

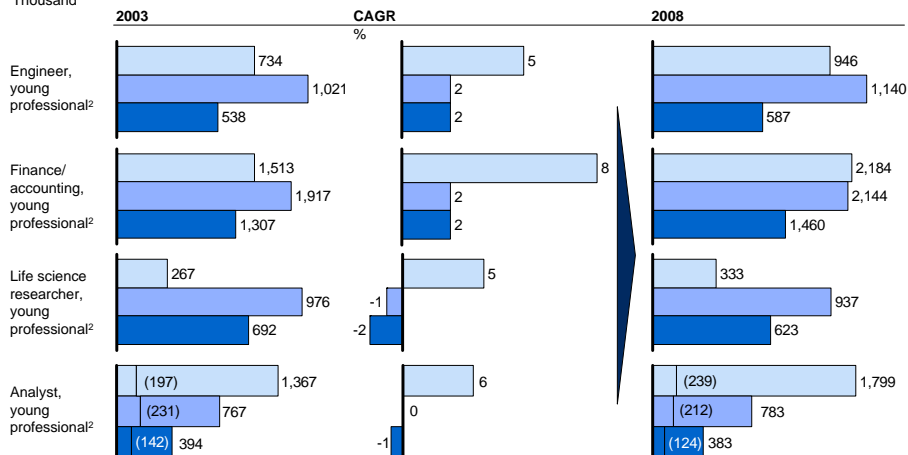
The suitable pool of talent in low-wage nations is growing faster than in high-wage ones. This holds true for each of the eight occupations we examined, except doctors (Exhibits 33 and 34). The supply of young finance and accounting professionals is growing 8 percent annually in low-wage countries but 2 percent in high-wage ones; the figures for life science researchers is 5 percent in low-wage countries but negative 1 percent in high-wage ones. This divergence in growth rates will narrow the gap between developed and developing labor supply in many occupational categories. The supply of engineers, for example, will become fairly equal between the developing and developed countries in our sample by 2008.

## Exhibit 33

### HIGHER GROWTH RATES IN LOW-WAGE COUNTRIES LEAD TO A NARROWING GAP OF YOUNG PROFESSIONAL SUPPLY (1/2)

Suitable labor supply<sup>1</sup> – 2003  
Thousand

(X)=Pure analyst degree holders<sup>5</sup>  
 Low-wage countries in sample<sup>3</sup>  
 High- and mid-wage countries in sample<sup>4</sup>  
 U.S. only



<sup>1</sup> Accessibility and domestic competition for talent are tackled as sensitivity issues later.

<sup>2</sup> ≤7 years of work experience.

<sup>3</sup> Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

<sup>4</sup> Australia, Canada, Germany, Ireland, Japan, South Korea, U.K., U.S.

<sup>5</sup> Only considering university degrees in mathematics, physics, statistics and not considering interchangeability from engineering, finance, and life sciences.

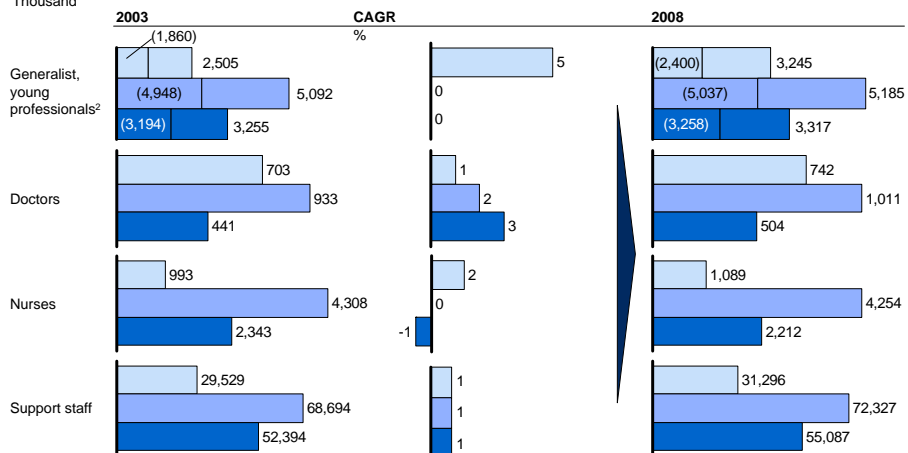
Source: HR interviews; Country labor & graduation statistics; McKinsey Global Institute analysis

## Exhibit 34

### HIGHER GROWTH RATES IN LOW-WAGE COUNTRIES LEAD TO A NARROWING GAP OF YOUNG PROFESSIONAL SUPPLY (2/2)

Suitable labor supply<sup>1</sup> – 2003  
Thousand

(X)=Pure analyst degree holders<sup>5</sup>  
 Low-wage countries in sample<sup>3</sup>  
 High- and mid-wage countries in sample<sup>4</sup>  
 U.S. only



<sup>1</sup> Accessibility and domestic competition for talent are tackled as sensitivity issues later.

<sup>2</sup> ≤7 years of work experience.

<sup>3</sup> Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

<sup>4</sup> Australia, Canada, Germany, Ireland, Japan, South Korea, U.K., U.S.

<sup>5</sup> Only considering university degree in any non-specialist field (e.g., sociology) but not considering interchangeability from unsuitable for specialist fields.

Source: HR interviews; Country labor & graduation statistics; McKinsey Global Institute analysis

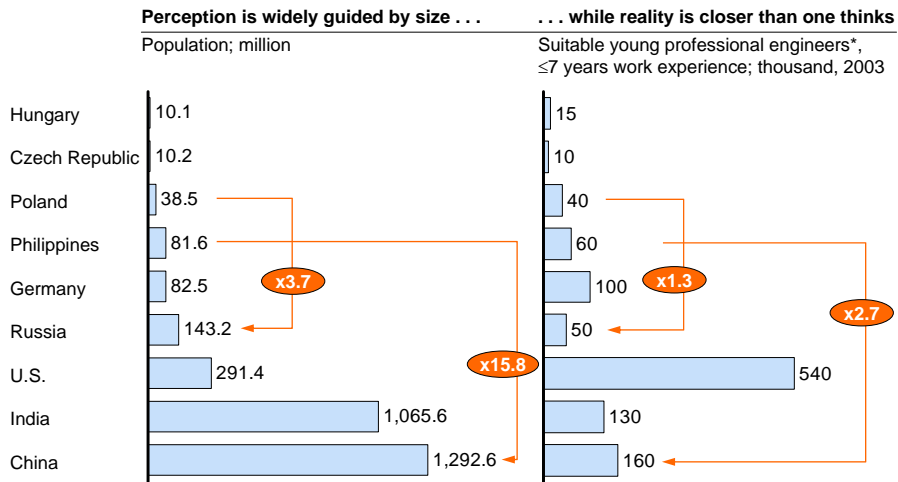
**Many smaller countries have sizeable, attractive talent pools**

Given differences in the portion of university graduates that are suitable and available to work for a multinational company, many smaller countries can be attractive offshoring destinations and have sizeable, attractive talent pools.

Even though China's population is 16 times the size of the Philippines, for instance, its pool of suitable young professional engineers is only 3 times the size of the Philippines. Poland has nearly as many suitable engineers as the much more populous Russia, and the Philippines has more than Russia (Exhibit 35). By 2008, Poland, Hungary, Russia, and the Czech Republic together will have as many suitable generalists as India, and nearly as many suitable engineers (Exhibit 36). As a result, many countries beyond China and India are likely to play a role in the emerging global labor market.

**Exhibit 35**

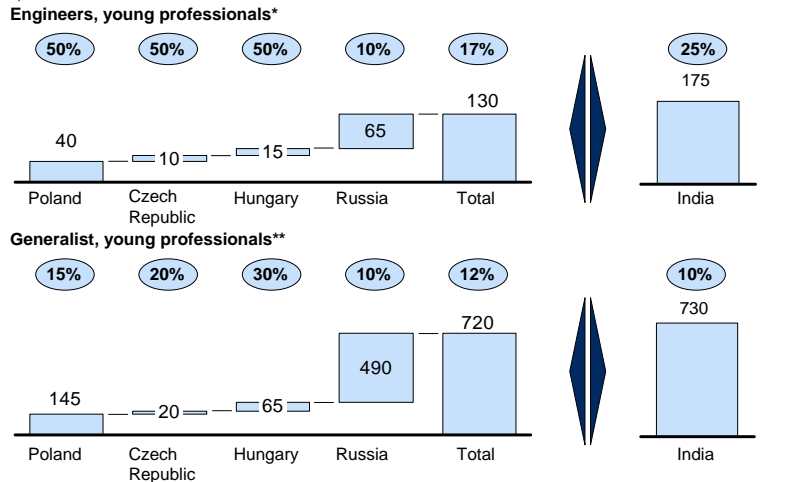
**POPULATION IS NOT ALWAYS AN APPROPRIATE INDICATOR FOR SUITABLE LABOR SUPPLY**



## Exhibit 36

### DIFFERENCES IN GRADUATION RATES AND SUITABILITIES SUGGEST ATTRACTIVE ALTERNATIVES TO LARGE LOW-WAGE COUNTRIES

Thousand, 2008



\* University degree in engineering (except civil and agriculture) and computer science/IT; ≤7 years of work experience.

\*\* University degree in any non-specialist field (e.g., sociology) plus some candidates unsuitable for engineering, finance and life sciences to account for interchangeability; ≤7 years of work experience.

Source: HR interviews; Country labor and graduation statistics; McKinsey Global Institute analysis

### Middle managers are scarce

Although we did not quantify the supply of suitable middle managers in low-wage countries, our interviews clearly indicated that middle manager scarcity is a constraint to growth in offshoring for many countries. It depends on four factors:

- **Size and growth of offshoring sector.** India has been developing its export-oriented service sector, especially in IT and call-center businesses, for more than a decade, creating a sizeable pool of experienced middle managers. More nascent offshoring markets—like Russia and China—lack this. In fact, some Russian entrepreneurs have tapped India for middle managers.

However, India still clearly has a scarcity of managers, because growth in the offshoring sector has been so rapid. Employment in the sector has grown more than 20 percent per year over the last ten years, and even more briskly in some cities. New entrants often poach the qualified managers from existing business instead of investing to train their own, and middle manager scarcity in India is intensified by the efforts of other countries to recruit managers from established

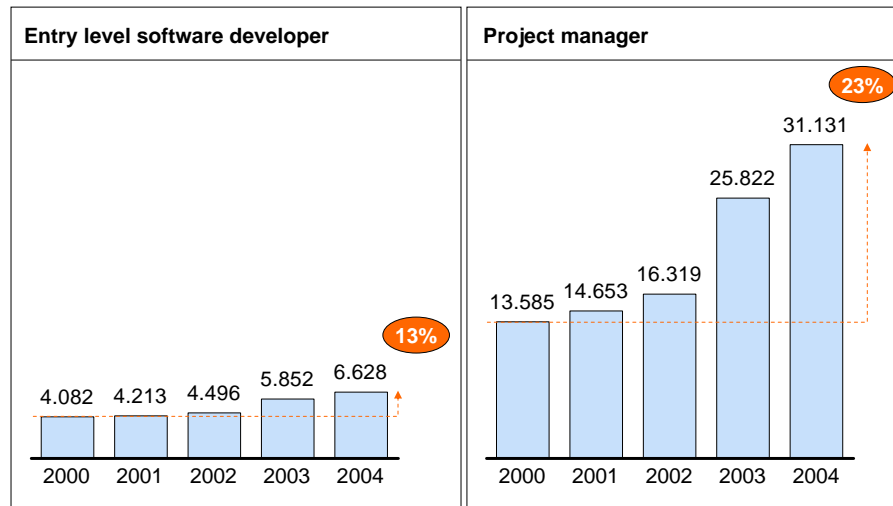
operations in India. Rapidly rising wages signal their scarcity: Annual wages for project managers in India's export-oriented IT sector have increased 23 percent annually over the last four years, while programmer wages increased 13 percent (Exhibit 37).<sup>10</sup>

**Exhibit 37**

**WAGES OF IT JOBS IN INDIA HAVE INFLATED DRASTICALLY**

● CAGR

Annual wage  
US\$



Source: Press release

- **Maturity of the domestic economy.** Countries with more mature economies generally have a larger suitable management supply than younger emerging markets.
- **Dominance of large corporations.** Employment in some countries, such as the Philippines, tends to be concentrated in small- and medium-size enterprises. These businesses typically have limited number of management layers, and multinationals usually do not consider them as a major source of suitable middle-management talent.

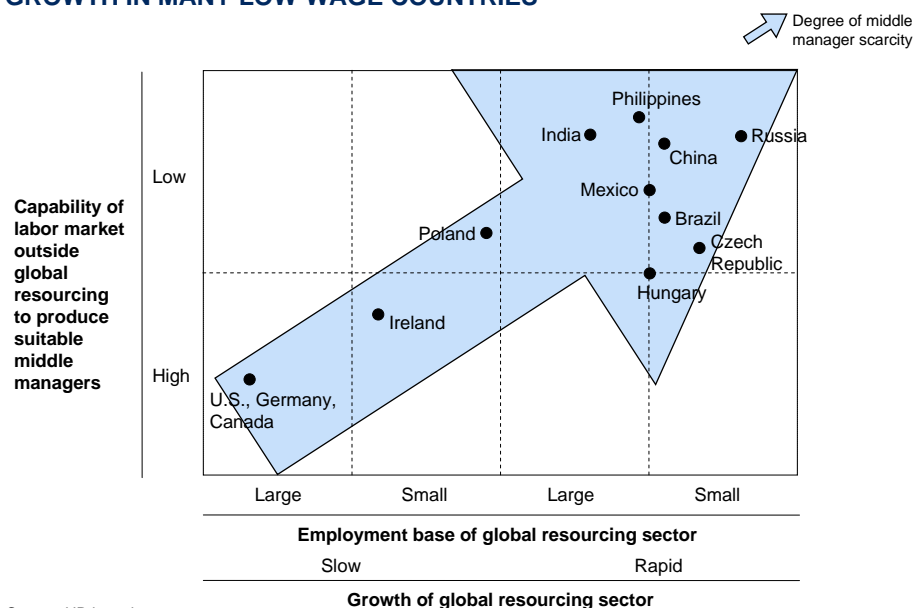
<sup>10</sup> J. Pulienthuruthel and M. Kripalani, "Good help is so hard to find - higher wages and lavish perks reign as outsourcing outfits scramble for talent," *BusinessWeek*, February 14, 2005.

- **The diaspora.** Immigrants who spend time abroad and return home can be a valuable source of management talent. India and China are particularly well suited to benefit, given the number of emigrants they send abroad. In 1998, a stock of 400,000 highly skilled Chinese and 300,000 highly skilled Indians had emigrated to the United States. Our interviews suggest that multinational companies frequently transfer Chinese managers in their home countries back to China in order to set up operations there.

Exhibit 38 summarizes our assessment of manager scarcity for the ten low-wage countries we studied in depth. We focused on the first two factors that influence manager scarcity, given their relative importance. Our interviews suggest that middle manager scarcity is most prevalent in Russia, China, and the Philippines, due to their relatively young but quickly growing offshoring sectors. Manager scarcity is still problematic in India. Given the rapid growth of its offshoring sector, companies with sufficient management layers to produce experienced middle managers have yet to evolve in significant numbers. Manager scarcity was less of an issue in Poland and Brazil, where the existing supply of managers is able to fill the much smaller need there.

**Exhibit 38**

**CURRENTLY, MIDDLE MANAGEMENT SCARCITY IS A CONSTRAINT TO GROWTH IN MANY LOW-WAGE COUNTRIES**



Source: HR interviews

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## IMPLICATIONS FOR COMPANIES AND COUNTRIES

These findings have far-reaching implications for multinational companies that need to select the best locations for their global activities and for the countries that want to attract such investment.

### **Companies should look at the suitable labor supply, not aggregate figures**

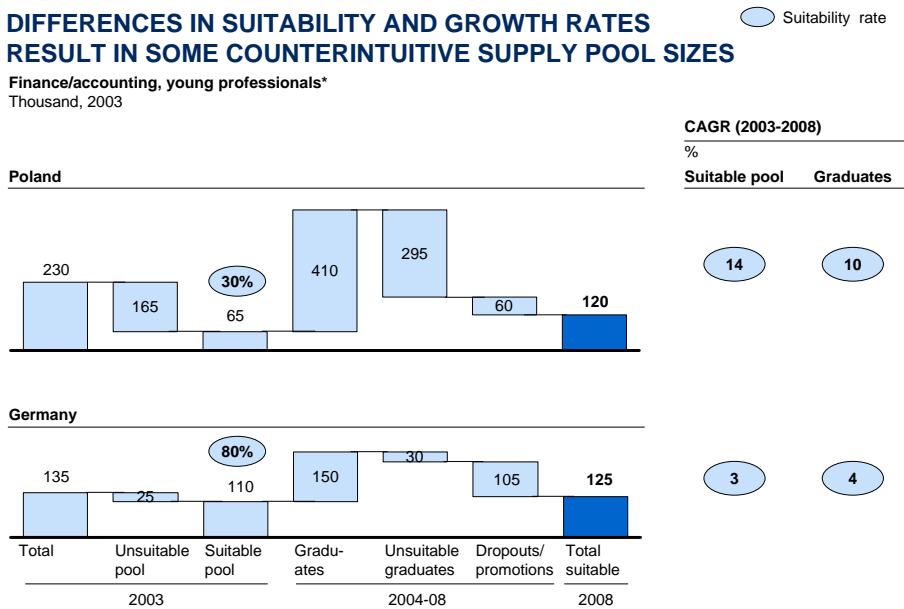
With globalization increasing in speed and complexity, companies need to fully understand the actual available labor supply for their activities in a variety of low-wage nations. Simply following where other companies have set up shop will often not be the best strategy. Given labor supply constraints and rising wage and attrition rates in some cities, and the sunk costs incurred once a location is chosen, managers should consider the following:

- **Macroeconomic figures alone should not guide labor supply assessment.** Companies should instead focus their quantitative assessment on specific occupations that are most crucial to sustain their operations, and also judge the suitability, or quality, of the labor pool. There are many attractive countries—at least from a labor supply perspective—besides the ones that appear to be the most attractive based solely on their large population. As graduation rates grow much faster in Poland than in Germany, for instance, Poland is likely to almost match Germany's supply of finance/accounting young professionals by 2008 (Exhibit 39). Companies should also keep in mind that countries with a high level of suitable workers are also likely to have lower talent acquisition costs and be easier places to replace talent in case of attrition.
- **Increase the suitability of the labor supply.** Suitability is hardest for companies to influence, since they are mostly the domain of educational institutions, but not impossible. Private initiatives and joint company-university efforts have been successful in increasing the quality of talent in several developing countries. In India, NASSCOM—the IT industry association—is working to increase scope and scale of India's prestigious Indian Institute of Technology (IIT) and the National Institute of Technology (NIT). In Russia, software company associations have provided additional practical and management education to engineering students. In China, Microsoft has established partnerships to fund a private software engineering academy and provide electronic learning platforms.

## Exhibit 39

### DIFFERENCES IN SUITABILITY AND GROWTH RATES RESULT IN SOME COUNTERINTUITIVE SUPPLY POOL SIZES

Finance/accounting, young professionals\*  
Thousand, 2003



\* University degree in finance, accounting, economics, business; ≤7 years of work experience.  
Source: HR interviews; country labor and graduation statistics; McKinsey Global Institute analysis

- Look at multiple locations.** It is perhaps simpler for companies to address issues of limited accessibility, and they can substantially increase their available pool of labor by doing so (Exhibit 40). Given the fragmented labor supply in many labor markets, companies have three main options to improve the accessibility of workers:
  - *Explore second-tier cities and/or multiple locations.* Companies should monitor graduation rates on a city rather than country level, in order to access second-tier cities with potentially large labor pools. Pune, for example, is an Indian city with two-thirds the population of Bangalore, but reportedly has twice the number of college graduates.<sup>11</sup> Many experienced IT services providers in India are already following a multiple-location strategy to address potential labor shortages in top-tier cities.

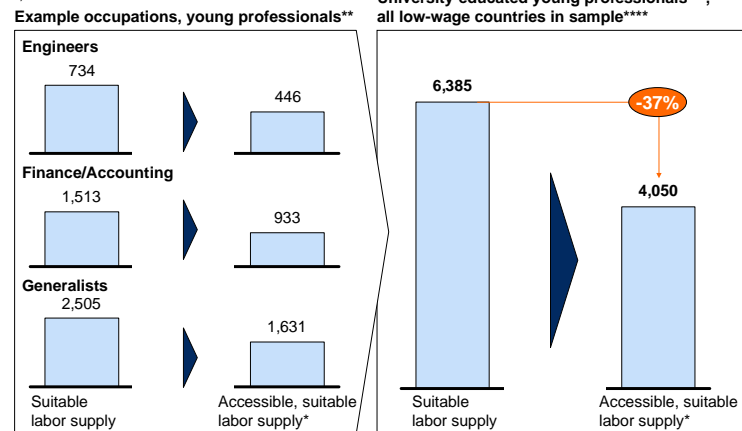
<sup>11</sup> G. Bhagowati, "Why Indian suppliers are moving to tier 2 cities," Everest Research, [www.outsourcingBPO.com](http://www.outsourcingBPO.com)

## Exhibit 40

### LIMITED ACCESSIBILITY OF GRADUATES WITHIN COUNTRIES COULD DEPRESS SUITABLE, LOW-WAGE LABOR SUPPLY BY UP TO 37%

LOWER BOUNDARY ESTIMATE

Impact of limited accessibility on suitable, low-wage labor supply\*  
Thousand, 2003



\* Applying empirical accessibility rates to India (63%), China (51%), and Russia (44%) and average of these to rest of low-wage supply; applying estimated 90% accessibility to high-wage supply.

\*\* Work experience  $\leq 7$  years.

\*\*\* Engineers, finance/accounting, analysts, life science researchers, generalists; work experience  $\leq 7$  years.

\*\*\*\* Incl. Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Republic, Estonia, Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Slovakia, Slovenia, South Africa, Thailand, Turkey, Ukraine, Venezuela, Vietnam.

Source: HR interviews; country labor & graduation statistics; McKinsey Global Institute analysis

- *Evaluate telework options.* The same technological advancements that allowed offshore service delivery to emerge might now offer a way around accessibility issues. JetBlue Airways does not require its eight hundred reservation agents to move for call-center employment. Agents work from home, their computers connected to the airline's servers; they stay connected to customers via voice-over-IP phones. ODesk offers customers the service of individual IT professionals in 15 countries around the world; all work as contractors and none comes to an oDesk office.
- *Increase the attractiveness of mobility.* Our interviews revealed more than one example in which companies attracted talent from remote locations by offering non-monetary incentives to move. One US company purchased land in India, built family houses, and rented them to their employees.
- **Consider your competition.** An assessment of labor supply is not meaningful without considering the demand from other companies for the same labor pool at the same location. An annual growth rate of 6 percent in the low-wage

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supply of young professional engineers does not guarantee a sustainable supply, nor does it moderate wage increases if demand grows stronger than the supply. In general, companies are facing a tradeoff when making similar location decisions as their competitors: They have to weigh the positive effects of "agglomeration," which includes the establishment of superior infrastructure and an experienced vendor base against potential labor shortages in key occupations, and therefore rising wages and attrition rates.

### **Countries should boost the quality, not quantity, of university-educated labor**

Low-wage countries seeking to attract offshoring face a host of issues as well. As they work to improve the supply of suitable labor, countries should prioritize labor quality enhancements over increases to labor quantity alone. This yields higher returns and would improve most country's prospects more dramatically.

On the surface, improving the quantity of university-educated labor might seem to produce big results. For example, if India were able to gradually increase its share of college-educated people in the workforce from the current 5.1 percent to 10 percent, its absolute number of university-educated people in the workforce would jump from 25 million to almost 50 million (not including any population growth). However, this would require a massive investment in new educational institutions. And still, only 10 percent to 25 percent of the additional graduates would qualify for a job in India's export-oriented services sector. The remaining 75 percent to 90 percent of graduates would swamp India's nascent domestic economy.

South Korea's educational policy in the early 1980s offers a case study on the effect of a forced increase of college enrollment. The South Korean government intervened to increase the number of college graduates by nearly three times over the five years from 1975 to 1980. By the 1980s, Korea had the third-highest college enrollment in the world, behind Canada and the United States, "which may be considered as a case of over-education in view of the level of Korea's development," two Korean researchers concluded. "It drastically reduced the availability of the labor force by retaining larger numbers of [the] economically active population in the educational system. While there are severe shortages in semi-skilled and skilled manpower, about one-half of all college graduates are still seeking employment."<sup>12</sup>

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<sup>12</sup> H. Choo and K. Cheong, "Some lessons from Korean experiences in human resource development," Kangwon National University, <http://cc.kangwon.ac.kr/~kimoon/papers/hr-lessn.htm>.

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A less distorting way to improve the quantity of labor is to direct the mix of graduates toward professions in the greatest demand by offering educational grants. However, market forces of supply and demand usually work to produce the same changes, as the profusion of private IT institutions in India shows. And these measures would still need to address the qualitative deficiencies many multinationals are seeing.

Rather than seeking to increase the raw number of college graduates, large developing economies with low suitability rates like China, India, and Russia can produce the greatest impact by improving the *quality* of their college graduates. Government and industry initiatives targeted specifically at the main deficiencies identified earlier in this report could unlock a huge labor supply potential.

For instance, if Chinese engineering graduates were to gradually reach the current suitability rate of their Indian counterparts by 2008, China would be able to provide nearly twice the supply of suitable young professional engineers for multinational companies as India. The primary areas to focus on are language education and practical skills training (Exhibit 41, scenario 1).

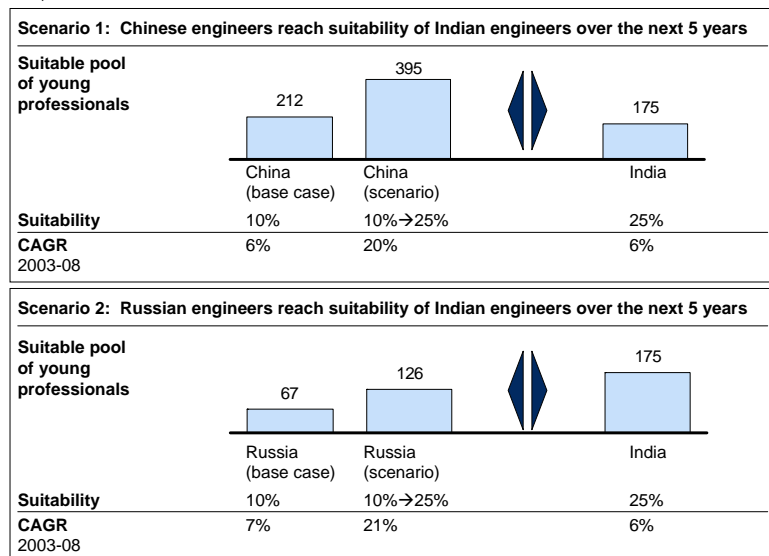
Similarly, Russia would be able to provide almost the same number of suitable young professional engineers as India does if it were to reach a comparable suitability rate by 2008. The main issue in Russia is the highly theoretical nature of the university system—a great opportunity for industry leaders to supplement the university curriculum with free courses on topics with direct practical relevance, especially project management (Exhibit 41, scenario 2).

Quality enhancements should be undertaken in collaboration with industry leaders—and their efforts should start with language education. Throughout large developing countries, and in particular China and Brazil, our research shows that foreign language education is in the most urgent need for improvement. Since a large share of offshoring activity currently originates in English-speaking countries, and because the occupation most active in offshoring—information technology—relies heavily on English as its *lingua franca*, it seems logical to concentrate any language education efforts there. In Eastern European countries—where language abilities seem to be very strong already—another competitive advantage of graduates is their good knowledge of German and French, which should be further nurtured.

## Exhibit 41

### POTENTIAL SUITABILITY IMPROVEMENTS WOULD UNLOCK A LARGE SUPPLY POTENTIAL

Thousand, 2008



Source: India/Russia Ministry of Education; China Education Yearbook; HR interviews

Other deficiencies vary by country and occupation, and countries need to tackle them systematically. It is essential that private-public partnerships play a vital role in overcoming problems, with such measures as:

- *Understanding key deficiencies.* Educational institutions in developing countries should work in close collaboration with domestic and multinational employers to regularly assess their graduates' success rate and the reasons for any deficiencies. We believe that the types of interviews we conducted with industry experts could provide a relatively easy-to-implement way to gain such feedback. In addition, most of our interviewees were committed to giving hands-on advice about what to improve.
- *Overcoming deficiencies.* We found examples in developing countries that show how private engagement and joint company-university efforts successfully increased the quantity and quality of available talent, some of which have already been mentioned. Governments and educational institutions should seek out these types of public-private partnerships, while companies should do their part to build them since multinationals benefit the most from high-quality talent.

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- *Fostering study abroad.* We found that studying abroad was extremely effective for the educational institutions that strongly fostered it. Governments can help by offering grants for students to learn away from their home country. Our interviews indicate that management and entrepreneurial skills are an extremely critical catalyst for global resourcing growth. Students who gain experience abroad, or who return from foreign studies, understand best the requirements of both worlds. Research proves that this was the case in Ireland, where the return of skilled emigrants has increased the domestic supply of skilled workers. There, 66 percent of the founders of software firms had worked abroad.<sup>13</sup>
  - *Leverage the diaspora.* Besides being a pool of management talent, emigrants can play a powerful role as ambassadors in their new home countries when location decisions are made. Indeed, our interviews about the ways in which actual location decisions happen support this notion. Moreover, research supports the anecdotal evidence of the favorable impact this experience had on the success of the Indian IT export industry.<sup>14</sup>

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<sup>13</sup> A. Sands, "Eye of the Tiger: Evolution of the Irish Software Industry," in *The Rise and Growth of the Software Industry in Some Emerging Economies*, ed. A. Arora and A. Gambardella (Oxford: Oxford University Press, forthcoming).

<sup>14</sup> D. Kapur and J. McHale, "Sojourns and Software: Internationally Mobile Human Capital and the Software Industry in India, Ireland, and Israel," in *The Rise and Growth of the Software Industry in Some Emerging Economies*, ed. A. Arora and A. Gambardella (Oxford: Oxford University Press, forthcoming).



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