

# NEW SKILLS AT WORK

## SKILLS SHORTAGES IN THE CHINESE LABOR MARKET

### EXECUTIVE SUMMARY



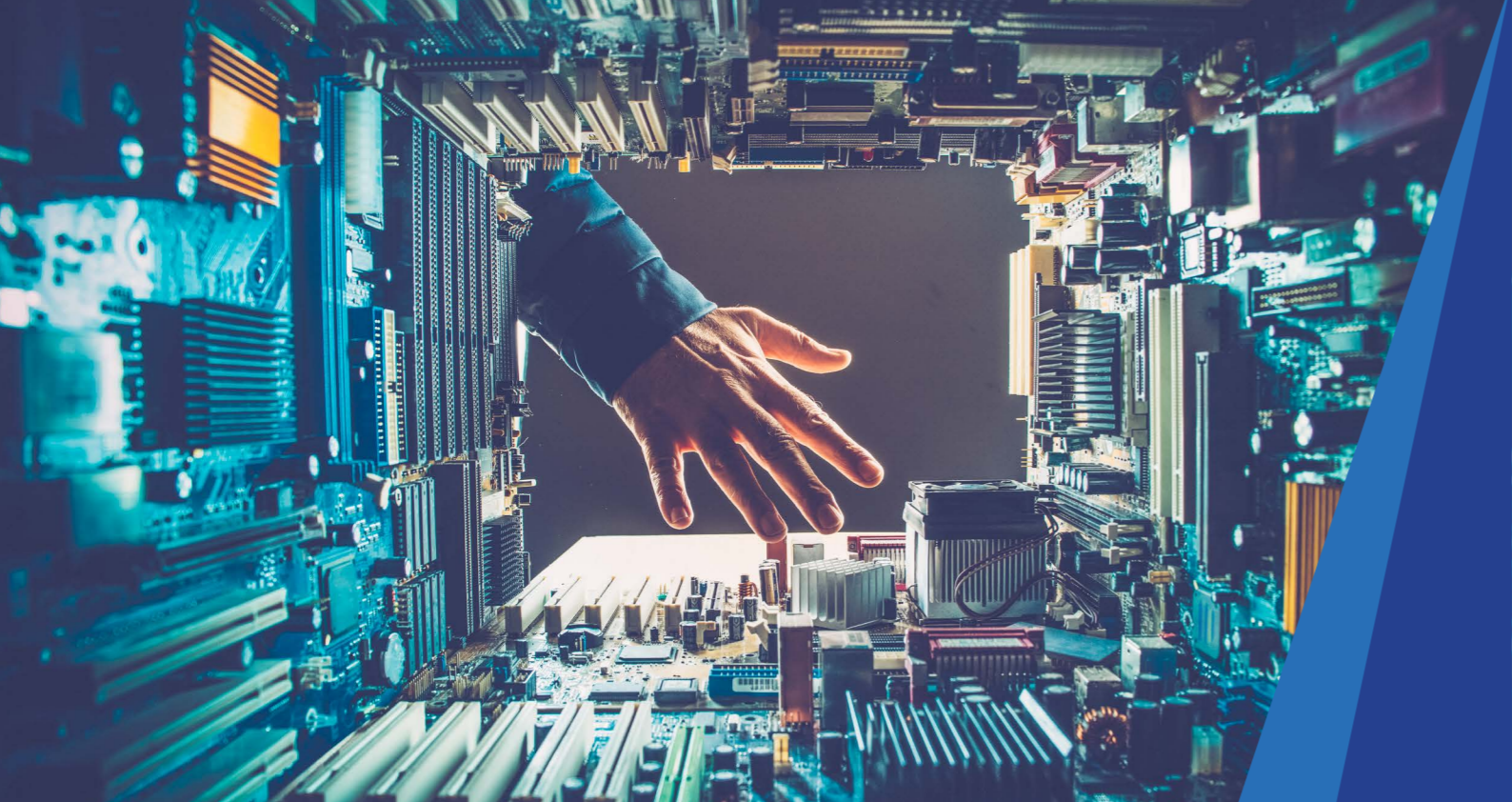




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# 1. OVERVIEW



**Macroeconomic transformation and structural change has resulted in increased skills mismatches in the Chinese labor market.**



China, global powerhouse and the world's largest developing country, faces an acute skills shortfall along with the challenges of an ageing population and a shrinking labor force. Labor costs are rising, supply and demand is dangerously skewed, and vocational training is unable to fill the breach fast enough. Labor – more accurately, the quality of labor and the speed of training, transformation and transfer to where it is needed most – is the motor that needs to be fine-tuned to ensure that China's growth does not grind to a halt.

This key issue is the focus of the study commissioned by J.P. Morgan, conducted by Professors Li Qiang of Tsinghua University and Yuan Zhigang of Fudan University that captures the nature of skills supply and demand in China, and explores ways to narrow the deficit.

A team of more than 30 researchers from the two top universities in Beijing and Shanghai took over a year to complete the study. Unlike earlier efforts, this was a cross-disciplinary collaboration examining a broad range of socio-economic factors. It involved innovative analysis of multiple datasets ranging from official macro Chinese labor market data to first-hand national representative micro-level surveys, making cross-sectional and longitudinal comparisons and combining rigorous quantitative analysis with in-depth qualitative research. This constitutes, we believe, a far more systematic and comprehensive analysis of Chinese labor market trends than anything attempted in previous studies.

The study highlights gaps in supply and demand for highly skilled labor, and regional differences in the type of skills required, at a time when businesses across China are facing an acute skills shortage. Two particular challenges identified by the study are the shortage of employees with training and skills in internationalized management and strategic planning, and skill deficits encountered by enterprises that are seeking for industrial upgrading. Five policy recommendations are put forward to help resolve the skills shortage.

1. Schools and universities should be granted greater autonomy, with more school-business cooperation so that the educational institutions can better understand the needs of enterprises and adapt appropriately. Joint training by universities and enterprises is likely to be effective in the process of sourcing and developing talent.
2. More subsidies are necessary for vocational training to help rural migrant workers acquire modern skill sets and upgrade their knowledge base.
3. New vocational training models in which enterprises play a major role should be established.
4. An artisanal spirit should be promoted alongside the development of a diversified and modern vocational education.
5. At the macro level, administrative and industrial monopolies need to be dismantled in order to allocate human resources more efficiently. In pursuit of equal opportunities, the household registration, social security, and education systems should be reformed to foster an environment that promotes labor force participation, job mobility, and entrepreneurship.





## 2. PRINCIPAL FINDINGS OF THIS REPORT

“ Industry upgrading and service industry development has led to a greater demand and higher reward for labor with upgraded skills. ”

### A. Labor demand: current situation and problems

(1) The supply-demand gap for high-skill labor is widening

China is transitioning up the value chain from the 'world's factory' for low-end products to a purveyor of quality information products, high-end technology and services. This has led to greater demand for labor with upgraded skills and competence. Data from the Ministry of Human Resources and Social Security shows that skilled workers account for only about 19% of the entire workforce, with highly skilled workers constituting

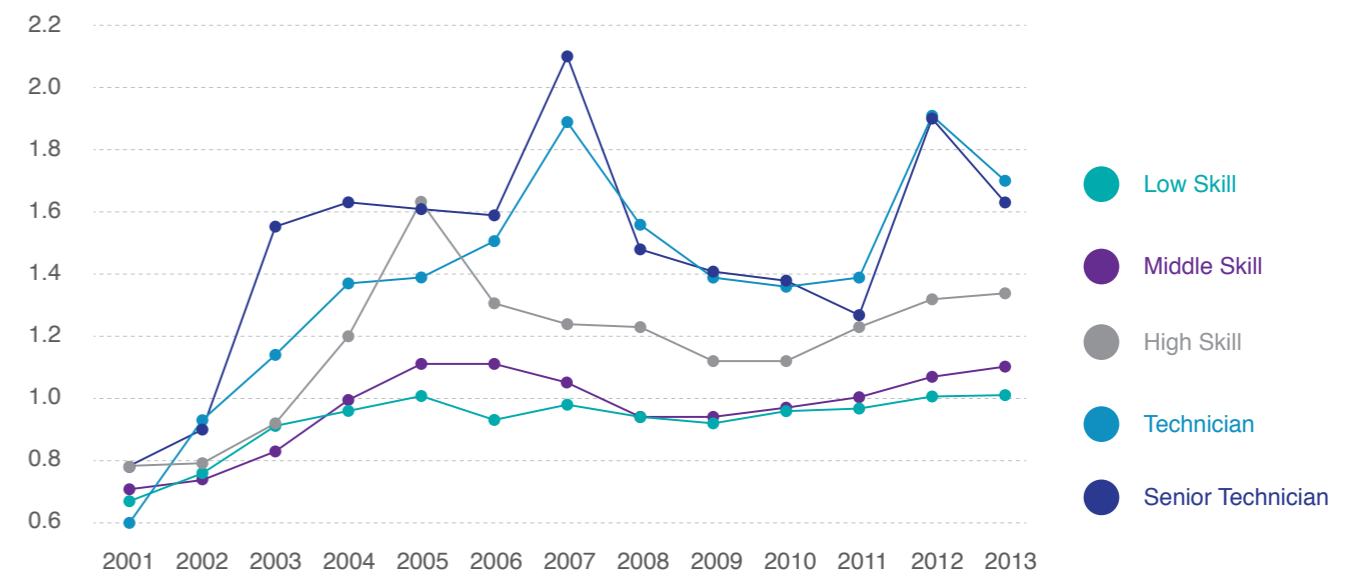


Figure 1: Number of demand/number of job-seekers: divided by skills

only 5%. Although the demand for low-skilled labor is substantial, because of the abundant supply, there is almost no demand-supply gap in that group (Figure 1).

### (2) Highly skilled workers are rewarded far more

While wages in general have risen steadily, incomes of high-skill workers have grown much faster than average. As a rough guideline, education levels of workers can be used to gauge their skill levels. In 2007, the average wage of workers with at least a college education was 1.86 times higher than that of workers with a middle school education or lower. This figure increased to 2.75 times in 2013 (Figure 2), demonstrating a strong demand for workers with high skills.

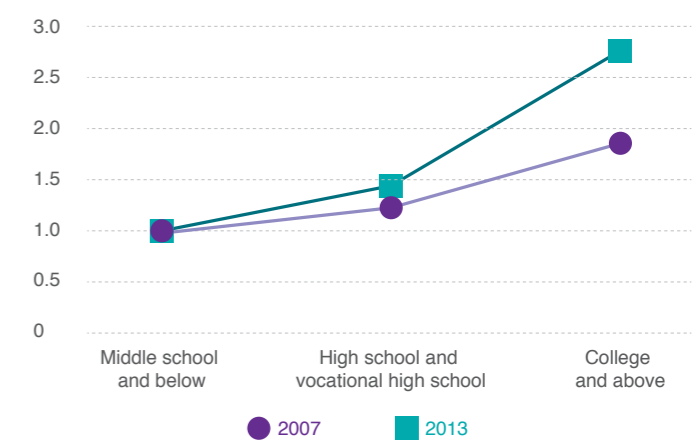
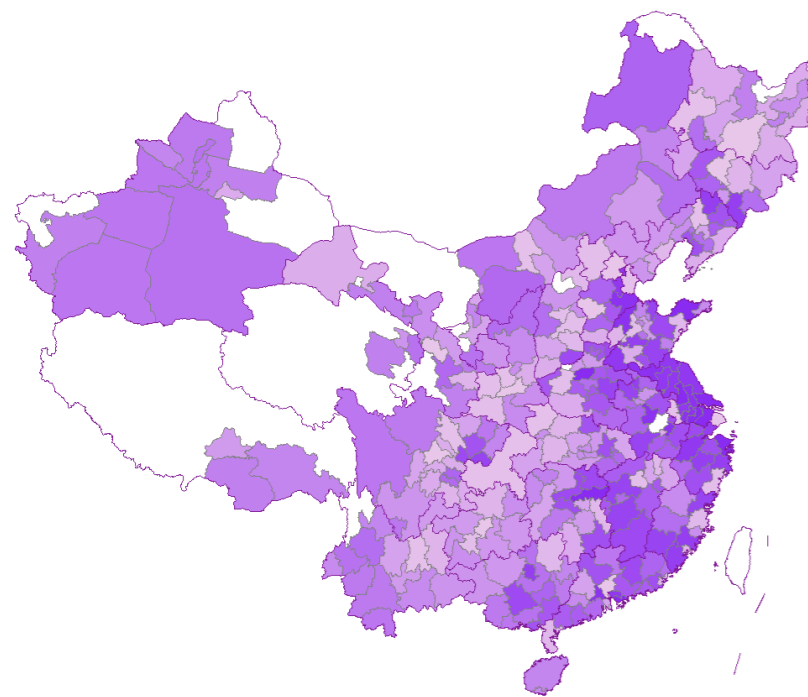


Figure 2: Relative wage changes for labors of different education levels (2007-2013)

### (3) The growth of the service industry will lead to greater demand for professionals

Economic growth and the citizenry's aspiration for a 'quality' lifestyle (travel, shopping, and consumer services) has encouraged the rapid development of service industries in China, with the service



The colors from dark to light represent high skilled manufacturing industry employment proportion changes ranked from high to low; based on the Jenks natural breakpoint method, changes in urban manufacturing employment proportion were divided into 32 color levels; only data for prefecture-level cities in mainland China are included.

Figure 3: Employment distribution changes in urban high skill manufacturing industry in 2003-2013

sector accounting for more than 50% of GDP for the first time in 2015. To increase export earnings in a globalized economy, China must move up the value chain from exporting cut-price goods to developing modern service industries and manufacturing with higher added value. Service industries dealing with IT, software, accounting, finance, marketing, and customer management, are expected to grow and absorb a substantial number of professionals.

**(4) Regional demand for skilled workers in the manufacturing sector is increasingly more agglomerated**

Manufacturing, which will continue to be the main pillar of the Chinese economy for the foreseeable future, is concentrated in the eastern provinces. The 'agglomeration' of a more highly skilled labor

pool in the east has attracted high-tech industries to the area, squeezing out medium- and low-skill industries as land and labor costs rise. These industries have had to relocate deeper in the hinterland or move to neighboring countries. In terms of employment growth, from 2003 to 2013, the industries experiencing the fastest growth were mostly high skilled, such as nuclear radiation processing, oven, furnace and electrical furnace manufacturing, radio and television equipment manufacturing, environmental protection, public safety and other specialist equipment manufacturing, and medical equipment and instrument manufacturing. Changes in skill levels across different industries showed a Matthew Effect: not only do industries with higher initial skill levels keep their skills advantage over time, but their skill levels increase more rapidly than is the case in other industries.

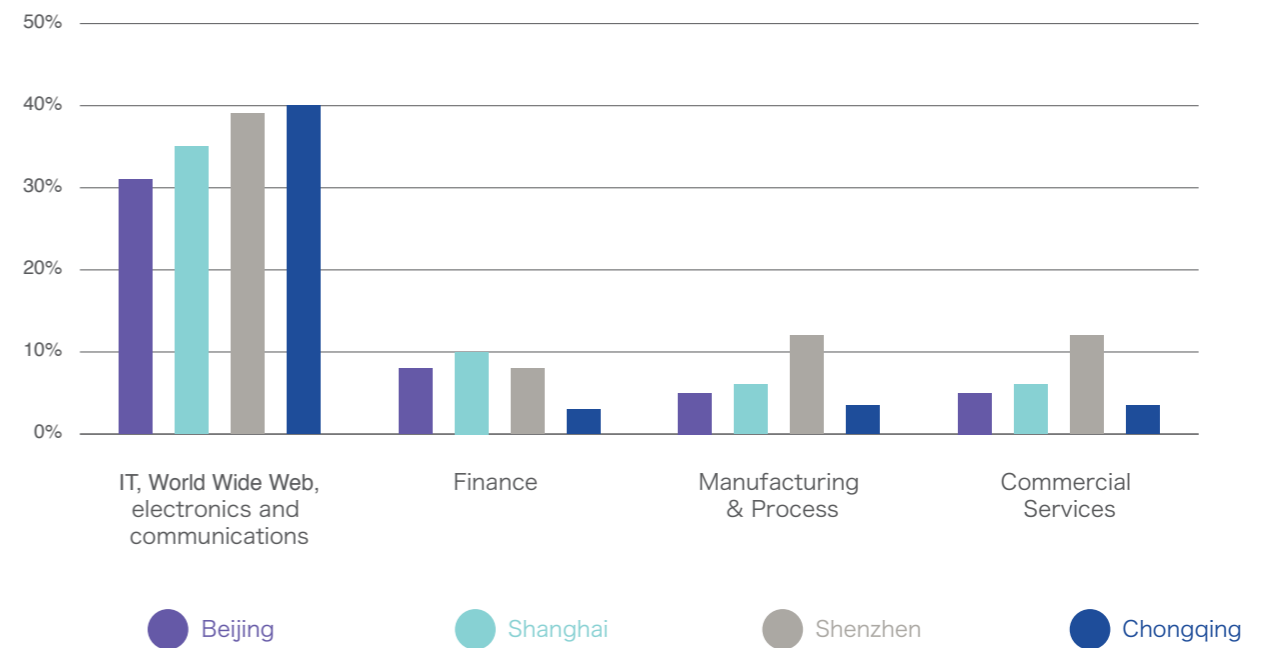


Figure 4: Percentage of demand for talents of higher education level in different cities divided by industries

Looking at the distribution of employment across cities indicates that high-skill industries tend to be concentrated in eastern coastal areas. Figure 3 shows that the industries in the eastern provinces that achieved the largest employment share growth from 2003 to 2013 were mainly high-skill industries such as those manufacturing aerospace components, electronics, and electrical machinery. And that curve continues to climb.

**(5) Demand for skilled workers differs widely across regions**

Eastern China has substantial demand for highly skilled workers, but the ample skills supply typically balances demand. The supply-demand gap that exists is mainly structural, reflecting a mismatch among different skills. Although the demand for high-skill workers in the western regions of China

is not as high as in the east, the gap there is larger because of a smaller labor supply.

There are considerable disparities in economic development, labor supply, and industrial policies across Chinese cities. Not only does the demand for skilled workers have different distribution patterns across industries – or even within the same industry – but cities also have very different methods of production or levels of technology, resulting in varying demands for labor. For example, in Chongqing, labor demand for high-skill workers in the manufacturing, financial, and service sectors is lower than in the same sectors in, say, Beijing, Shanghai and Shenzhen. Manufacturing industries in Shenzhen and the finance sector in Shanghai both have relatively greater demand for high-skill workers (Figure 4).





**(6) Endemic skills shortages are most acute in internationalized management and strategic planning**

Our survey of several thousand enterprises reveals that almost every firm has a skills shortage of one degree or another (Figure 5). Of the nine types of skills included in the survey, firms are experiencing shortages in at least six types of skills on average.

As firms get more involved in the global division of labor, it is essential that they develop better management and long-term planning skills. Globally competitive entrepreneurial talents are essential for survival and development. A key finding is the acute shortage of workers with international management and strategic planning skills.

**(7) Diverse skills shortages across regions**

In general, a region's attractiveness to high-skill workers is correlated with its economic structure and level of development. Compared with the eastern provinces, skills are in particularly short supply in western China. Firms located in provinces with a lower level of GDP per capita or with a smaller service sector as a proportion of GDP tend to find it more difficult to find high-skill workers. In detail, we found that (1) as most skilled workers are attracted to the eastern provinces, skills shortages in R&D, capital operation, and Internet-related business are far more pronounced in the western provinces. However, the shortage of highly skilled technical workers is more acutely felt in the east than elsewhere. (2) The skills gap

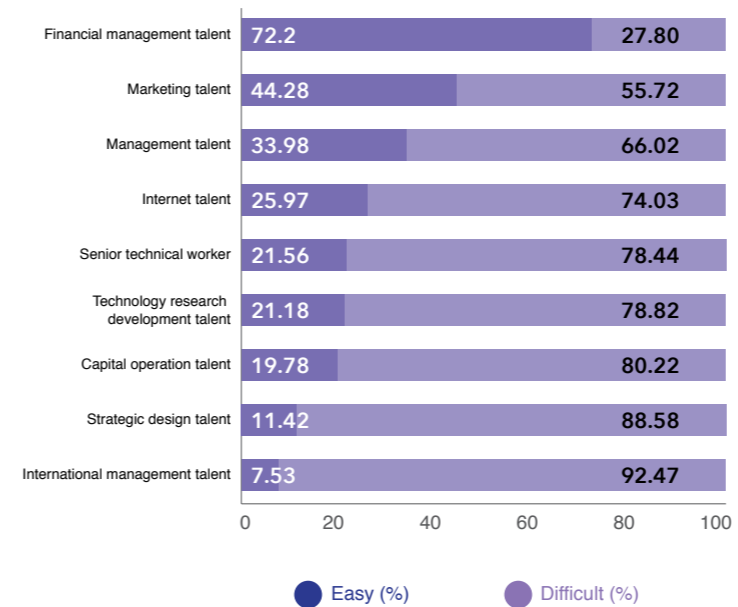


Figure 5: Comparison of difficulties in acquiring all kinds of talents

is negatively correlated with a province's level of economic development. (3) Provinces with a more developed service sector tend to experience a less pronounced skills shortage, suggesting that a well-developed service sector has become a key competitive advantage for a region to win the game for talent.

**(8) Skills shortages vary across firms with different ownership types**

Domestic companies in China claim to have more severe shortages in skills related to capital management, Internet services, and R&D, compared with companies from Hong Kong, Macao, Taiwan, and elsewhere (Figure 6). Because

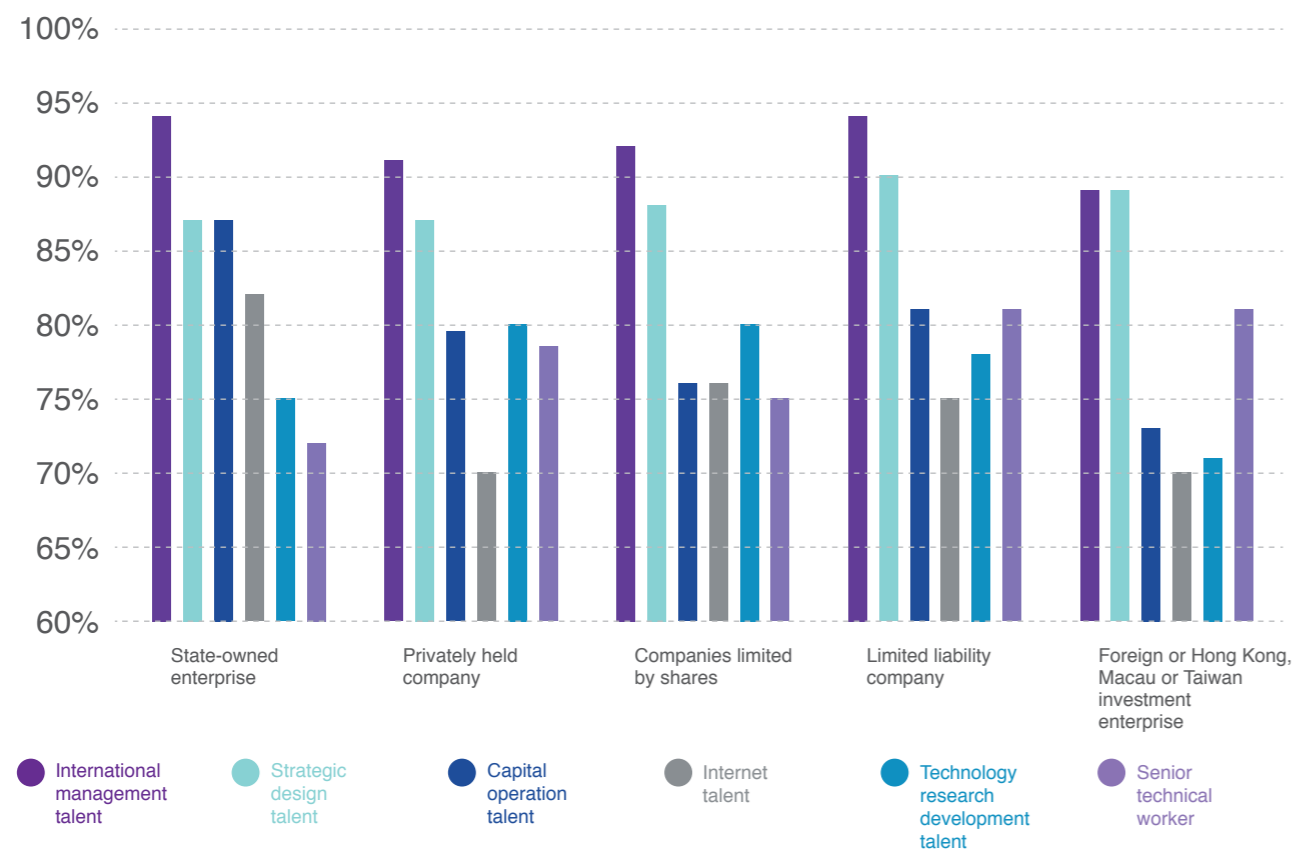
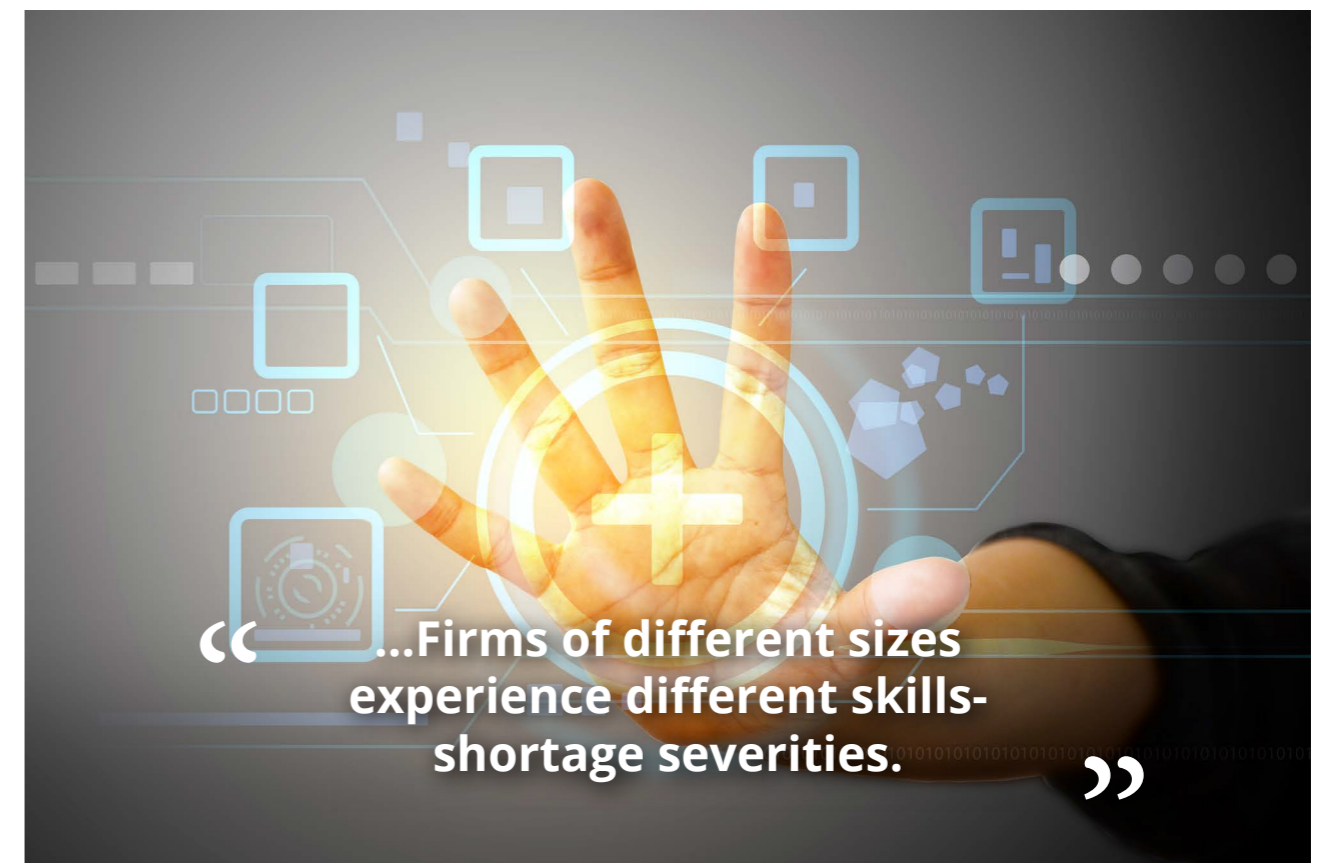


Figure 6: The degree of shortage of different types of talents in different types of enterprises

foreign companies have relatively higher labor productivity and wages, they can attract skilled individuals more easily. Private companies and other domestic firms suffer skills shortages when it comes to strategic design and R&D, reflecting, to some extent, the demand for further development and technology upgrades. In terms of more highly skilled technical workers, domestic limited liability companies and firms with investors from Hong Kong, Macao, Taiwan, face the most serious shortages.

#### (9) Skills shortages vary by firm size

Small and medium size firms tend to experience intense shortages of skilled workers for strategic planning and advanced technology research since they are focused on growth. Large and medium size enterprises, which are mature but seeking transformative changes, generally experience skills shortages in areas relating to capital management and Internet services.



“...Firms of different sizes experience different skills-shortage severities.”

### B. Labor supply: current situation and problems

(1) The skills of college graduates (including those returning from overseas) typically do not match market demand. These graduates have unrealistic career expectations with resultant low job satisfaction

A fundamental problem is that school programs, courses and enrollments are determined by higher educational institutions without a proper consideration of market demand. Secondly, students themselves are unprepared for employment, leading to a high turnover rate. Surveys show that one third of university

graduates leave their jobs within six months of graduation, and about 70% of companies believe that what students learn in school has little practical value. Third, the gap between college graduates' employment expectations and their actual work placement is huge. For example, college graduates generally prefer employment in government agencies and state-owned enterprises, but the vast majority of new jobs are in the private sector (Figure 7).

(2) Applications for vocational schools are few in number and low in quality. Further government subsidies are needed to raise the quality of vocational education



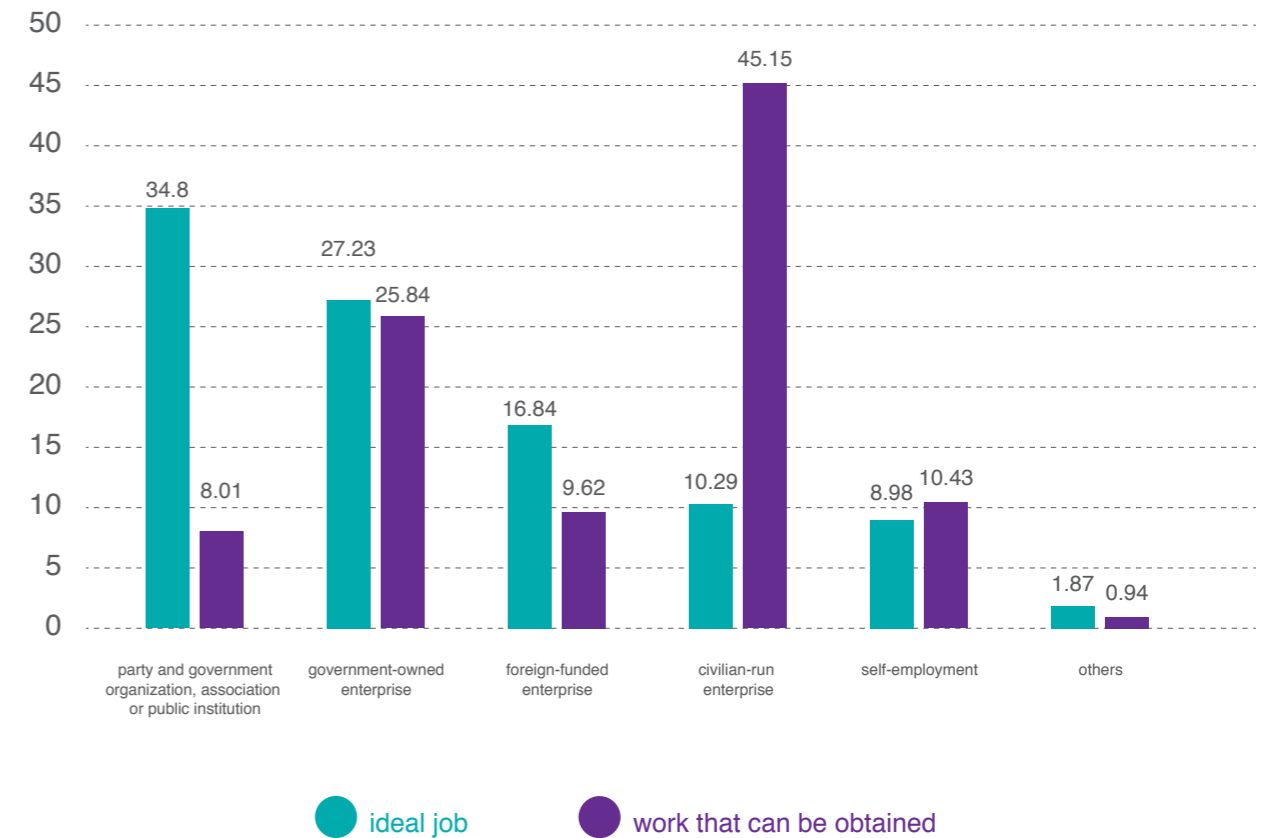
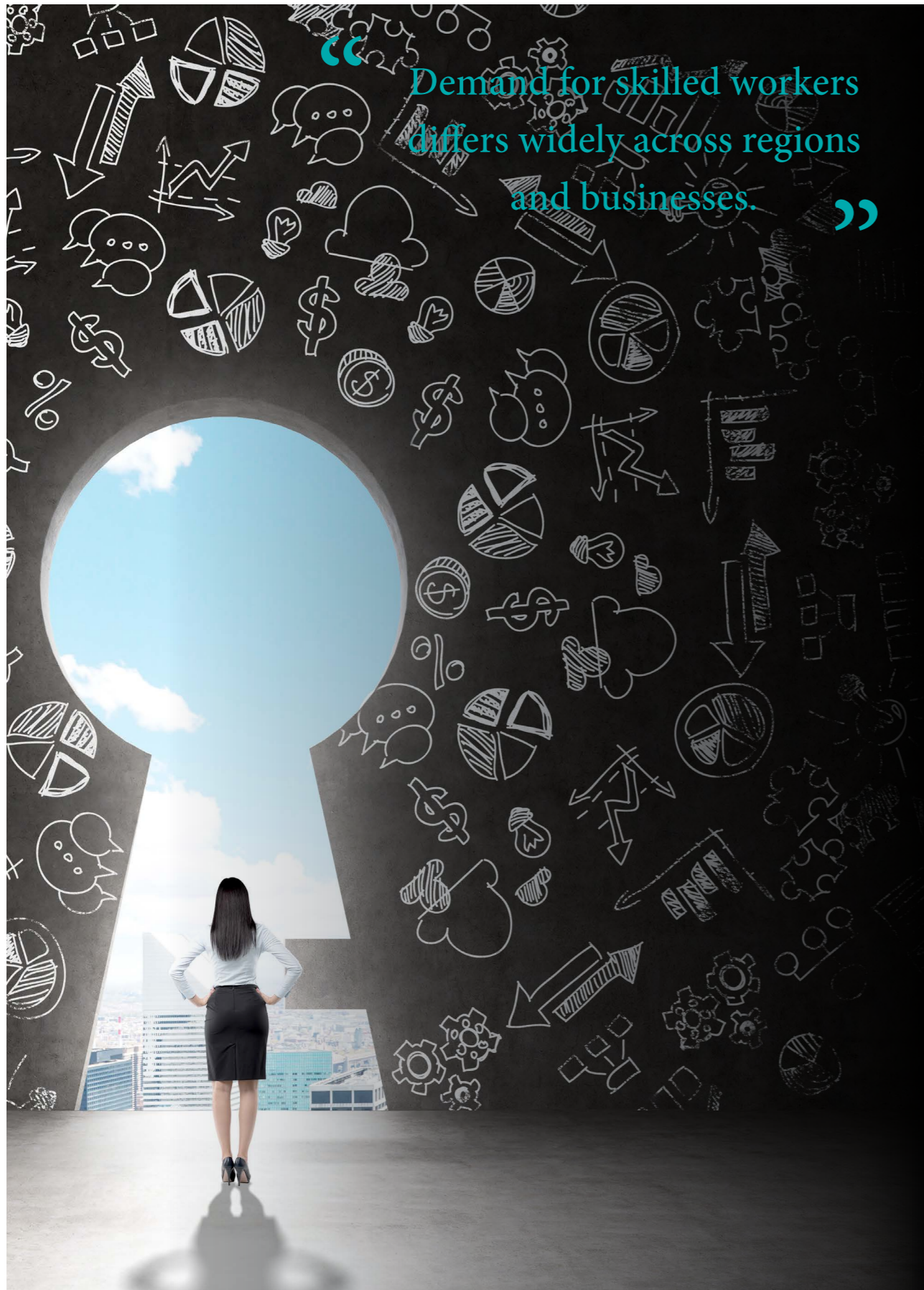


Figure 7: The ideal job of college graduates and the work that can be obtained

Secondary vocational education in China is experiencing a decline in the number of applicants, enrolled students, and full-time teachers. In terms of higher vocational education, government spending still favors general education over vocational training. Higher vocational education institutions receive only about a third of the government funding per student allocated to universities. Vocational education schools also suffer from other problems, including sub-par practical training, an unwillingness on the part of firms to participate, and a lack of meaningful and effective cooperation between schools and firms.

**(3) Education and skill levels of migrant workers are low, dimming future career prospects**

Although the younger generation of migrant workers is better educated than their parents, skill levels are still relatively low and job-training opportunities are lacking. The number of migrant workers in China was close to 280 million in 2015, making up more than a quarter of the working age population. Workers from rural areas are employed mostly in the manufacturing and construction industries. Not only do they have low income levels and little social security, they also have restricted access to formal skills training, thus reducing their chance of upward mobility. Data show that only 33% of migrant workers have received formal training, and only



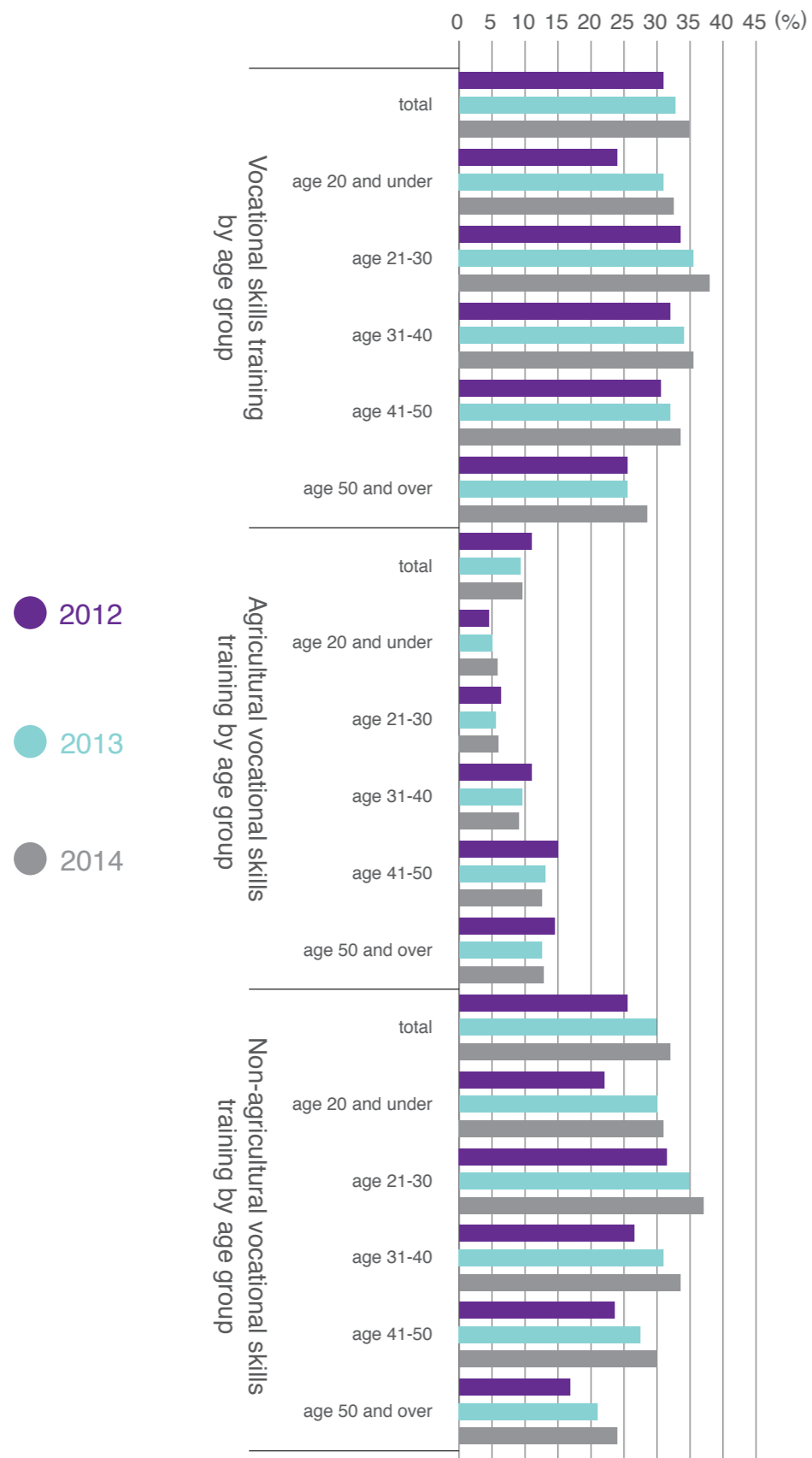


Figure 8: China's migrant workers vocational skills training by age group



5.9% have vocational or technical certificates. Only 0.3% of migrant workers become employed through referrals by a vocational training institute (Figure 8).

To sum up, the labor supply in China suffers from two serious structural problems: low-skilled workers are not ready for automation and 'intelligent' production, while the skills of 'high-skill' workers are not what firms really need. With the development of information technology, production processes are changing together with the level of skills required. Well-educated university graduates and overseas returnees do not in general meet the needs of the market either.

Simply put, structural unemployment and worker groups vulnerable to unemployment are the result of the skills supply-and-demand gap. Analyses show that the three groups with the greatest risk of unemployment are migrant workers aged 16–29, college graduates aged 22–24, and the middle-aged and elderly aged 45–60. Enhancing the skill levels of these three groups is the key to reducing their unemployment risk and keeping China's unemployment rate low.





## 3. RECOMMENDATIONS

The following five policy recommendations are proposed:

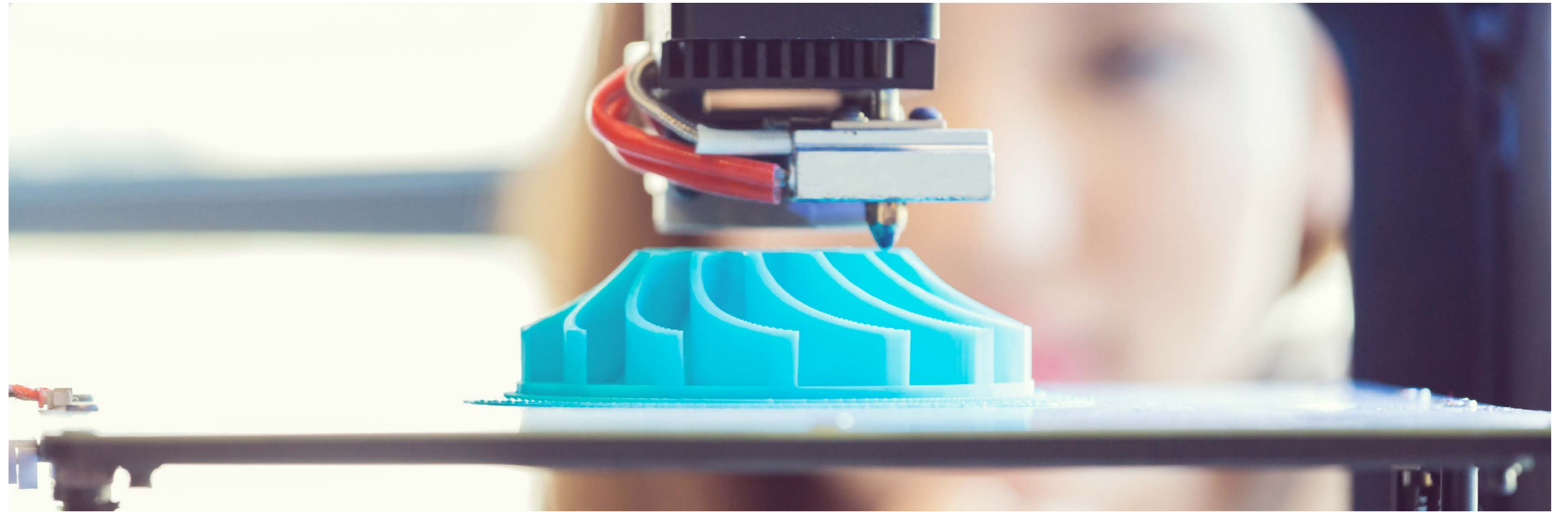
(1) **Grant universities greater autonomy, promote interaction between universities and enterprises, and encourage universities and enterprises to cultivate high-skill workers together, so that the education institutions can better respond and adapt to market needs.** Establish working mechanisms to involve industry, universities, and the public in curriculum design. Promote in-depth cooperation between schools and firms so that students can be trained according to the needs identified. Provide career advice to college graduates so that they are better informed about the labor market and join it with realistic employment expectations.

“ **Improve educational and vocational training systems; allocate human resources according to market demand.** ”

(2) **Increase workers' access to vocational training and assist migrant workers in upgrading skills through government subsidy.** Provide upward mobility channels for migrant workers and broaden their access to formal vocational training. As suggested by Premier Li Keqiang, 'To enhance employment quality and the well-being of migrant workers and their families, migrant workers should be motivated to obtain employment in sunrise economic sectors, sunrise industries, and sunrise business models through information consultation and skills training.' Encourage the development of market-oriented training institutions and social enterprises. Loans or other forms of financial aid should be provided to those in need to pursue vocational training.

(3) **Establish a vocational education system with greater participation by enterprises.** While industry upgrades constantly raise the skills bar, neither vocational education nor on-the-job training currently meets the requirements of the labor market. It is desirable that domestic enterprises and multinationals provide – and promote – skills training programs based on their own specific needs. Given the reality that very few companies are willing to train their employees by themselves, as this is often seen as costly and time consuming, one way to proceed is to leverage staff 'stability'. For example, agreements that ensure trainees return to work for the firm could be drawn up and signed before the firm pays for employees to receive vocational training. Bonded scholarships are common in many countries. Meanwhile, government subsidies can be provided to incentivize enterprises to provide training for their employees. In addition,





unions and other labor organizations should also consider providing better quality on-the-job training.

**(4) Promote the artisanal spirit, better integrate different stages of the vocational education chain, including enrollment, education, employment, and development, and establish a more diversified modern vocational education system.** Establish a pathway that promotes the integration of secondary and higher levels of vocational education. Meanwhile, enhance the capability and willingness of enterprises to provide training, and encourage in-depth cooperation between schools and enterprises. Joint vocational training programs could be established, run by schools and companies. Improve certification systems of vocational

education institutions to create trustworthy standards for professional skills. This in turn could see increases in the income levels of professionals and technical workers. Encouraging diligence at work will not only increase product quality but also boost a technician's self-esteem and commitment to excellence. Encourage and support other types of vocational education providers, including for-profit training schools, social enterprises and NGOs.

**(5) At a macro level, barriers to the mobility of talent should be eliminated. Under the principle of equal opportunity, the household registration, social security, and education systems, and other systems should be reformed to foster a better functioning labor market. A properly**

functioning labor market requires certain institutional conditions. Education is becoming increasingly more expensive and seemingly less beneficial for the lower echelons of society. In recent years, public debate about the declining return from a college education, or about whether education can change one's life trajectory, are reflections of the current education/employment interface. Only when these issues are addressed will China be able to build a strong institutional foundation for talent development.





“ To close skills gaps, the Chinese educational, vocational training, and certification systems must be reformed, and macroeconomic policies adjusted to better allocate labor market resources. ”

## 4. SUMMARY

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With dramatic demographic and economic transitions underway, it is imperative that China close its skills gaps. With further globalization, shortages of workers with expertise in internationalized management, strategic planning, and capital management will become a major challenge for firms, impeding growth. China's transition to high-value-added manufacturing and modern service industries also depends crucially on whether there is a sufficient supply of skilled workers to get the job done.

To close the skills gap, the Chinese educational, vocational training, and certification systems must be reformed, and macroeconomic policies

adjusted. The talent waste due to skill mismatches needs to be reduced. Enterprises should be encouraged to provide more on-the-job training, while better thought-out curricula – with the government and private companies joining forces to ensure a good match – are required at service level. At the macro level, better institutional design is needed to optimize policies pertaining to population and talent.

The distribution pattern of employment and demand for skills depends largely on the distribution of industries and labor. The demand for high-skill labor is high and growing fastest in eastern China as compared to central or western China, but the supply of skilled labor is also higher in the east and the supply-demand gap is narrower. Central and western China should take advantage of relatively low costs for land, labor

and production to attract appropriate industries and workers with corresponding skills.

We hope this report will raise awareness about and deepen our understanding of the skills gap challenge. The government, business and academia should respond promptly and work together to tackle the problem while it is still manageable.

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