China’s Evolving Labor Market

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The China Model 1978-2010: from the Perspective of Labor Market

◆ Development: from agriculture to industry/services (Lewis Model)
  - Share of labor force in agriculture 1978-2009: 71% to 38%

◆ Transition: from plan to market
  - Relaxed restriction on labor mobility since early 1990s
  - Allow unemployment, non-state employers, wage gaps…

◆ Labor force: young and growing
  - Working population 1982-2010: 625 million to 975 million
  - Working population/Total population 1982-2010: 61.5% to 74.5%

◆ Improving human capital
  - Average years of schooling 1998-2008: from 6.2 to 8.9 years
  - College enrolment rate (relative to school-age cohorts) 1998-2010: 9.8% to 26.5%

Question: will the same story continue in next 30 years?
My Talk Today

- Quantity: population and labor supply
- Structure: Lewis turning point?
- Quality: college graduates
- Policy debates
My Talk Today

- Quantity: population and labor supply
- Structure: Lewis turning point?
- Quality: college graduates
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Demographic Transition in Textbook

Figure 6.6  The Demographic Transition in Western Europe

- Birthrate
- Death rate

Year:
- 1880
- 1890
- 1910
- 2000
- Future

Actual birth and death rates per 1,000 inhabitants:
- 0
- 10
- 20
- 30
- 40

Stage I
Stage II
Stage III

2011-5-18
Demographic Transition in History

◆ Major economies in history
  - UK: about 200 years (1750 -1980, according to Wikipedia), birth rate fell from 32 ‰ in 1840 to 13.2 ‰ in 1980 (Greenwood et.al. 2005)
  - US: about 100 years, TFR fell from 7 in 1800 to 2 in 1940, birth rate fell from 29.2 ‰ in 1910 to 14.9 ‰ in 1980 (Greenwood et.al, 2002, 2005)
  - Japan: about 60 years, fertility rate fell from 4.54 in 1947 to 1.26 in 2005 (Tsunoda, Tomoko and Glosserman, Brad, 2009)
China’s Fast Demographic Transition: 1978-2009

Source: China Statistical Yearbook (2010)
Demographic Transition

◆ China’s demographic transition is fast: 30 years
  - Total fertility rate (TFR) fell from 4.2 in 1974 to 1.4 in 2010
  - Birth rate fell from 20.91‰ in 1981 to 12.1‰ in 2009
  - Death rate remains constant around 6.4%-7% in past 30 years
  - Causes: One child policy & strong economic growth (Li et al., 2010)
It Happens When China is Not Rich

Ln (Real GDP per capita in 2009)

Source: IMF & CIA (2010)
Demographic Dividend: Past 30 Years

- Abundant labor
  - Rising share of work force: from 61.5% in 1982 to 74.5% in 2010

- Declining dependency ratio
  - Declining child dependency ratio: from 54.6% in 1982 to 22.3% in 2010
  - Gross dependency ratio: from 62.6% in 1982 to 34.2% in 2010

- Drop of fertility rate contributes to 1% per year to China's growth since 1978 (Li and Zhang, 2007)
Into the Future: No More Demographic Dividend

Falling birth rate means falling working population in 20 years

Source: China Statistical Yearbook (2010)
8.9% of population 65+ years old in 2010 census (UN definition of aging society: 7% of population above 65)

Into the Future: Following Japan?

- Japan’s aging problem and economic downturn
  - TFR dropped to 1.6 when income reached $10,000
  - Declining savings rate
  - Japan’s economic downturn and heavy fiscal burden to support the elderly

- China’s aging problem could be more severe
  - TFR dropped to 1.4 at a income level around $4,000 in 2010

My Talk Today

- Quantity: population and labor supply
- Structure: Lewis turning point?
- Quality: college graduates
- Policy debates
Debate: A Lewis Turning Point?

◆ Optimists: Still abundant surplus labors
  - Number of surplus labor was 159-368 million 2001-2005, and there is a large pool of non-migrants with high probability to migrate (Minami & Ma, 2009; Kwan, 2009; Knight, Deng and Li, 2011)
  - Rising wage of migrant workers is due to farmer’s growing income: government subsidy, tax reduction and rising food prices (Yao, 2010)

◆ Pessimists: no more surplus labor
  - Number of surplus labor was 44.9-43.6 million 2003-2005 (Wang and Ding, 2005; Du, 2010)
  - 107 million in 2004 (Cai, 2008)
  - Rising wage of migrant workers is due to shortage of labor (Cai, 2010)

A game of counting numbers
Far from the Long-term Equilibrium

China still has about 30-40% of the labor in agriculture!


<table>
<thead>
<tr>
<th>Region</th>
<th>Population (millions)</th>
<th>Urban (%)</th>
<th>Rural (%)</th>
<th>Labor Force in Agriculture (%)</th>
<th>Agricultural Share of GNP (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>World</td>
<td>5,840</td>
<td>43</td>
<td>57</td>
<td>49</td>
<td>--</td>
</tr>
<tr>
<td>Developed countries</td>
<td>1,175</td>
<td>74</td>
<td>26</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Europe</td>
<td>729</td>
<td>72</td>
<td>28</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>North America</td>
<td>298</td>
<td>75</td>
<td>25</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Japan</td>
<td>126</td>
<td>78</td>
<td>22</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Less developed countries</td>
<td>4,666</td>
<td>36</td>
<td>64</td>
<td>58</td>
<td>14</td>
</tr>
<tr>
<td>Africa</td>
<td>743</td>
<td>31</td>
<td>69</td>
<td>68</td>
<td>20</td>
</tr>
<tr>
<td>South Asia</td>
<td>1,417</td>
<td>27</td>
<td>73</td>
<td>64</td>
<td>30</td>
</tr>
<tr>
<td>East Asia</td>
<td>1,958</td>
<td>35</td>
<td>65</td>
<td>70</td>
<td>18</td>
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<tr>
<td>Latin America</td>
<td>490</td>
<td>72</td>
<td>28</td>
<td>25</td>
<td>10</td>
</tr>
</tbody>
</table>

The Debate is off the Point

Figure 3.1 The Lewis Model of Modern-Sector Growth in a Two-Sector Surplus-Labor Economy

\[ TP_M = f(L_M, K_M, I_M) \]
\[ K_{M3} > K_{M2} > K_{M1} \]

\[ TP_A = f(L_A, K_A, I_A) \]
\[ \frac{TP_A}{L_A} = W_A \]

(a) Modern (industrial) sector  
(b) Traditional (agricultural) sector
The Debate is off the Point

Assumptions of the Lewis model

- Farmers can automatically work in industrial/service sectors (no skill/human capital requirement)
- The only potential cost of moving away from agriculture is the loss of agricultural product (0 for surplus labor)
The Debate is off the Point

◆ When these assumptions do not hold
  □ Too costly to move (agricultural cost is trivial)
    ■ Cost of training
    ■ Costs of job search and transportation; lodging in cities
    ■ Public services: education, health care, pension
    ■ Family costs: long-distance between family members (elderly, couples and children), psychological costs
  □ Marginal cost of transfer could actually increase, where there is still *surplus labor* in agriculture
The Debate is off the Point

◆ The bottom line
  ▶ Wage: rising wage is caused by the rising cost of labor transfer, which can happen even if there are still surplus labor in agriculture
  ▶ Labor transfer: some surplus labor may never come out of agriculture (too costly to move)

◆ Simply counting the number of labor in agriculture/rural areas is NOT very helpful!
A More General Lewis Model

◆ The model should
  ❑ Consider the costs of migration
  ❑ Allow the marginal cost to change (increasing!)

◆ What evidence should we look for in understanding China’s labor transfer?
  ❑ Is the transfer movement slowing down?
  ❑ Is there evidence of rising marginal cost of transfer?
    ▪ Migrants become older?
    ▪ Avoid costly long-distance transfer?
    ▪ Rising wages?
My View

◆ Labor transfer is becoming increasingly costly in China!
Evidence

▶ Slow down of off-farm transfer movement
Growth of Migrant Workers Slows Down

Average Growth was 15% 2000-2003, only 4% 2004-2009

Source: Note: China Yearbook of Rural Households Survey (various years), China Statistical Yearbook (various years), The 60 Years of China's Agriculture--Statistical Data (2009), A Monitoring Survey Report on Migrant Workers in 2009 (2010)
Labor Shortage

- Rising Demand/Supply ratio: exceeds 1 in 2010
  - Newly-created jobs: 23.36 million
  - Number of job hunters: 23.17 million

Evidence

- Slow down of off-farm transfer movement
- Marginal cost of migration is rising
  - No more young workers in agriculture
  - Migrants become older
No More Young Workers in Rural China

<table>
<thead>
<tr>
<th>Age Cohorts</th>
<th>1995</th>
<th>2004</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-20</td>
<td>23.7</td>
<td>74.3</td>
<td>97.7</td>
</tr>
<tr>
<td>21-25</td>
<td>33.6</td>
<td>80.7</td>
<td>86.5</td>
</tr>
<tr>
<td>26-30</td>
<td>28.8</td>
<td>70.5</td>
<td>77.1</td>
</tr>
<tr>
<td>31-35</td>
<td>26.9</td>
<td>62.0</td>
<td>65.6</td>
</tr>
<tr>
<td>36-40</td>
<td>20.5</td>
<td>53.7</td>
<td>73.5</td>
</tr>
<tr>
<td>41-50</td>
<td>20.8</td>
<td>41.5</td>
<td>54.3</td>
</tr>
</tbody>
</table>

Source: Rozelle et al. (2008); deBrauw (2002)
# Migrants Get Older

## Age Distribution of Migrant Workers, %

<table>
<thead>
<tr>
<th>Year</th>
<th>18 or below</th>
<th>18-30</th>
<th>31-50</th>
<th>50 or above</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>2.3</td>
<td>50.7</td>
<td>43.5</td>
<td>3.5</td>
</tr>
<tr>
<td>2008</td>
<td>2.5</td>
<td>42.5</td>
<td>51.9</td>
<td>3.2</td>
</tr>
<tr>
<td>2009</td>
<td>1.5</td>
<td>42.4</td>
<td>53.2</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Evidence

- Slow down of off-farm movement
- Marginal cost of migration is rising
  - No more young workers in agriculture
  - Migrants become older
  - They choose low-cost locations to work (local and inland areas)
Less Out-of-Province Migration

- Work off-farm locally
  - More rural labors turn to work within province

<table>
<thead>
<tr>
<th>Year</th>
<th>Own county</th>
<th>Own province, but outside of county</th>
<th>Out of Province</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>36</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>2007</td>
<td>30</td>
<td>24</td>
<td>46</td>
</tr>
<tr>
<td>2008</td>
<td>47</td>
<td></td>
<td>53</td>
</tr>
<tr>
<td>2009</td>
<td>49</td>
<td></td>
<td>51</td>
</tr>
</tbody>
</table>

Migrant’s Destination: Shifts from East to West

Labor Shortage: Most Severe in Eastern China

- 2008 1Q, the D/S ratio in the Pearl River Delta area reached 1.89

Source: Annual Report about China's Labor Market (2001-2010), China Human Resources Market Information Monitoring Center, Ministry of Human Resources and Social Security of the People's Republic of China
Evidence

- Slow down of off-farm movement
- Marginal cost of migration is rising
  - No more young workers in agriculture
  - Migrants become older
  - They choose low-cost locations to work (local and inland areas)
  - Wage is rising
Rising Wage of Migrant Workers


Source: China Statistical Yearbook (2010), Zhao and Wu (2008); Ministry of Agriculture (2010); Knight, Deng and Li (2010); China Statistical Yearbook (2010)
Faster Wage Growth in Western China

Faster Wage Growth for Less-educated Migrants

Average Wage Growth 2007-2009

Long-run Equilibrium

- China will reach the stage of having less than 10% of the labor force in agriculture
- But, that does not mean transferring all current agricultural labor out
- Rather, it will happen when young labors replace older ones gradually: most of the young cohorts of rural labor will enter non-agriculture jobs
My Talk Today

- Quantity: population and labor supply
- Structure: Lewis turning point?
- Quality: college graduates
- Policy debates
Fast Expansion of Higher Education since 1999

- College admission 1998-2009: from 1.08 to 6.39 million
- Enrolment rate (relative to school-age cohorts) 1998-2010: from 9.8% to 26.5%
- College graduates 1998-2009: 0.83 to 5.31 million

Source: China Statistics Year Book (2010)
Fast Expansion of Higher Education since 1999

- From elite to mass education
  - Acceptance rate: 69.5% in 2010

Source: China Education Online (2011)
Shrinking Pool of Applicants

◆ Further college expansion
  ◆ Gross enrolment rate (relative to school-age cohorts) for higher education is aimed at 36% in 2015 (China’s 12th Five-Year Plan)

◆ Number of applicants is shrinking
  ◆ Fewer school-age children
    ◆ Senior high school enrolment dropped by 0.42 million in 2009
    ◆ Junior high school enrolment dropped by 1.44 million in 2009
  ◆ Growing number of students going abroad for college
    ◆ Growth rate of oversea students 2008-2010: 24.4%, 27.6% and 24.2%
    ◆ Students going abroad in 2010 alone: 284.7 thousand (flow)
    ◆ To US in 09/10: 127.6 thousand (rose by 29.9% from previous year)
Chinese College Student Survey by Tsinghua Data Center

◆ Annual survey of college students
  ◆ 2010
  ◆ 2011

◆ Follow up surveys
  ◆ Following them into the labor market

◆ National sample, randomly selected
  ◆ Final sample: 100 colleges
  ◆ 1600 students each college
What We Learned from the Survey?

◆ Sectoral allocation
Ownership Type: Ideal

Source: Chinese College Students Survey 2010, Tsinghua CDC
Ownership Type: Real

Source: Chinese College Students Survey 2010, Tsinghua CDC
Employment Rate by May 2010

Source: Chinese College Students Survey 2010, Tsinghua CDC
What We Learned from the Survey?

- Sectoral allocation
  - State sector is too strong—distorsionary labor allocation
  - Entrepreneur activities are scarce

- What do we provide in college?
Monthly Wage of College Graduates by GPA or English Score

Source: Chinese College Students Survey 2010, Tsinghua CDC
Monthly Wage of College Graduates by Party Membership or Student Leader

Source: Chinese College Students Survey 2010, Tsinghua CDC
What We Learned from the Survey?

◆ Sectoral allocation
  - State sector is too strong—distorsionary labor allocation
  - Entrepreneur activities are scarce
◆ What do we provide in college?
  - GPA does not pay, but English pays
  - Party membership, student union leaders pay
◆ Students’ own attributes matter more!
Monthly Wage of College Graduates by Sex

Source: Chinese College Students Survey 2010, Tsinghua CDC
Monthly Wage of College Graduates by Parental Background

Source: Chinese College Students Survey 2010, Tsinghua CDC
Monthly Wage of College Graduates by University Quality

Source: Chinese College Students Survey 2010, Tsinghua CDC
What We Learned from the Survey?

◆ Sectoral allocation
  - State sector is too strong—distorsionary labor allocation
  - Entrepreneur activities are scarce

◆ What do we provide in college?
  - GPA does not pay, but English pays
  - Party membership, student union leaders pay

◆ Students’ own attributes matter more!
  - Personal attributes
  - Family background
  - IQ (getting into a good college)
A Summary

- **Quantity**: labor supply will decline
- **Structure**: labor transfer will be more costly
- **Labor quality**: quality of college education is questionable
  - Misallocation of human capital between private and state sectors
  - Scarce entrepreneurial activities
My Talk Today

◆ Quantity: population and labor supply
◆ Structure: Lewis turning point?
◆ Quality: college graduates
◆ Policy debates
Relax the One-Child Policy?

- The changing demographics will have an impact on every dimension of the economy:
  - wage, consumption and savings, inflation, trade, global balance, innovation (need to be young) and growth
  - China will be the next Japan?

- Relax the One-child Policy
  - Now: a second child for couples who are both only child
  - Proposed: a second child if one parent is the only child

- How effective?
Urbanization Policy

- Currently, speed of industrialization is faster than urbanization
- Reduce the costs of migration
- Reduce *hukou*-related benefits
## Urbanization Policy

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Population, billion</th>
<th>Urban Population, billion</th>
<th>Urbanization Level, %</th>
<th>Growth of Urban Population, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1.27</td>
<td>0.46</td>
<td>36.23</td>
<td>4.13</td>
</tr>
<tr>
<td>2005</td>
<td>1.31</td>
<td>0.56</td>
<td>42.97</td>
<td>2.67</td>
</tr>
<tr>
<td>2006</td>
<td>1.31</td>
<td>0.58</td>
<td>43.91</td>
<td>2.95</td>
</tr>
<tr>
<td>2007</td>
<td>1.32</td>
<td>0.59</td>
<td>44.97</td>
<td>2.95</td>
</tr>
<tr>
<td>2008</td>
<td>1.38</td>
<td>0.61</td>
<td>43.92</td>
<td>2.19</td>
</tr>
<tr>
<td>2009</td>
<td>1.34</td>
<td>0.62</td>
<td>46.59</td>
<td>2.47</td>
</tr>
<tr>
<td>2010</td>
<td>1.34</td>
<td>0.67</td>
<td>49.68</td>
<td>6.63</td>
</tr>
</tbody>
</table>

Source: China Statistical Yearbook (various years), Sixth Population Census, Kam Wing Chan (2010).
Going Home for Chinese New Year

2011-5-18
Coming Back to the Labor Market
## Time out of Off-farm Labor Market

<table>
<thead>
<tr>
<th>Year</th>
<th>Days on off-farm job</th>
<th>Remaining days</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>261</td>
<td>104</td>
</tr>
<tr>
<td>2004</td>
<td>263</td>
<td>103</td>
</tr>
<tr>
<td>2005</td>
<td>267</td>
<td>98</td>
</tr>
<tr>
<td>2006</td>
<td>268</td>
<td>97</td>
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<tr>
<td>2007</td>
<td>271</td>
<td>94</td>
</tr>
<tr>
<td>2008</td>
<td>266</td>
<td>100</td>
</tr>
<tr>
<td>2009</td>
<td>268</td>
<td>97</td>
</tr>
</tbody>
</table>

Education: Quantity vs. Quality

◆ Strengthening compulsory education
  ▶ Due to high demand of unskilled labor, many rural students drop out from junior high school
  ▶ but, more education and skills will be needed in the future

◆ Education reforms
  ▶ Exam-oriented education has low returns (Li and Zhang, 2011)
  ▶ Current education system kills creativity; it is almost impossible to be leaders in technology
The Public Sector Reforms

- Spend more on human capital, less on physical capital
  - China’s fiscal expenditure on education in 2010: 3.1% of GDP (69.9% for FAI/GDP)
  - US in 2010: 6.1% of GDP; South Africa in 2009: 5.4% of GDP

- Tax more on capital, less on human capital or labor

- Have good environment for the private sector to grow: hopeful for innovation and entrepreneurship

- Cadre evaluation system
  - Strong incentive for officials to chase short-term economic growth and physical investment (Li & Zhou, 2005)