



Mobility of HRST in Government Research Institutes of China

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Presentation outline

- Introduction
- Measuring indicators
- General situation
- Basic structure characteristics
- Influence on S&T personnel structure
- Main conclusions

Introduction

- The survey and analysis on the mobility came from the needs of government.

Measure indicators(1)

- Stocks and flows of RHST in institutes

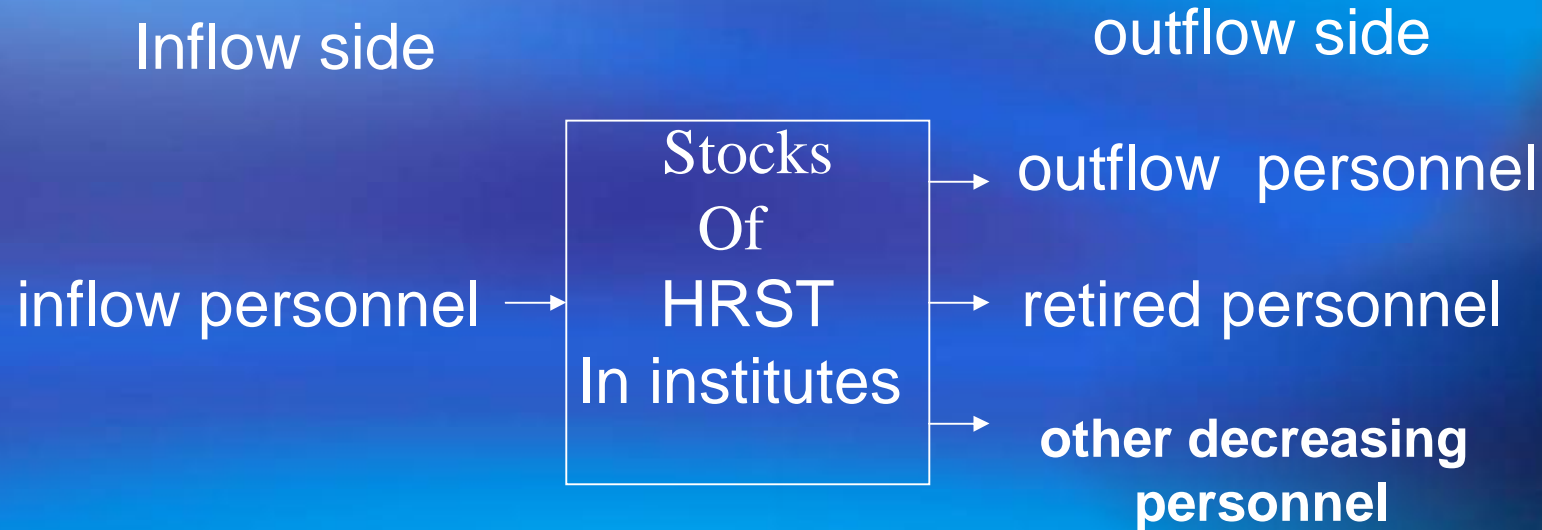


Figure 1

Measuring mobility(2)

- Indicators for measure
 - 1 **inflow** personnel;
entered in and were employed by the institutes
 - 2 **outflow** personnel;
left institute himself and were employed in other institutions;
 - 3 **retired** personnel;
retired from institutes;
 - 4 **other decreased** personnel;
currently **unemployed** by the institutes.

Measuring mobility(3)

5. net inflow personnel (flow directions)

= inflow personnel- out flow personnel

positive: inflow status; negative: outflow status.

6. personnel increase

= net inflow personnel – retired personnel

- other decreased personnel

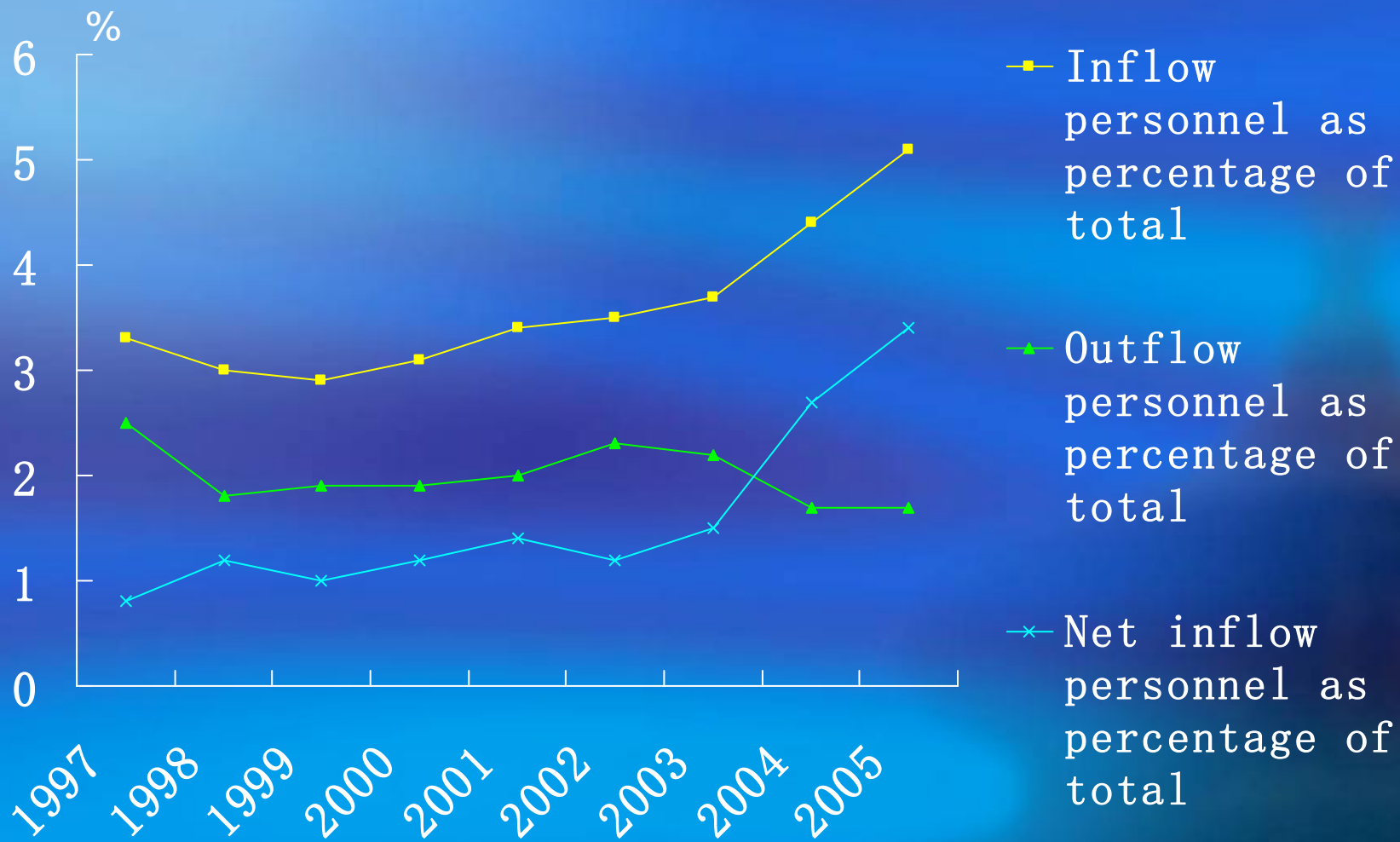
positive: personnel number increase status;

negative: personnel number decrease status

Measuring mobility(4)

- Using proportion indicators instead of scale indicators
- Indicators classified by education, age, and flow directions.
- Scope: not includes original government institutes which were changed into enterprises.

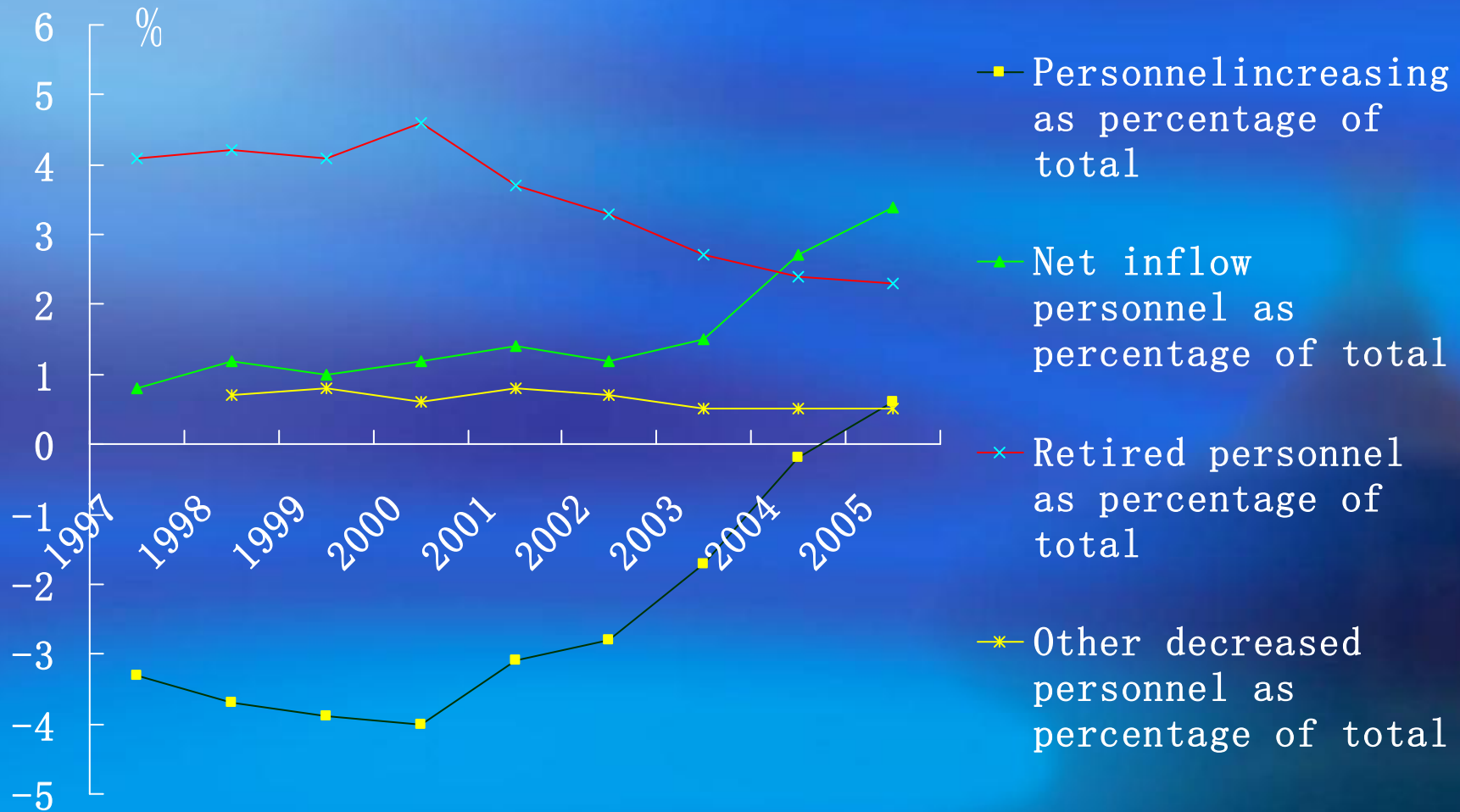
General situation(1997~2005) Figure 2



General description(1997~2005)1

- Inflow personnel as percentage of total rose gradually from 3.3% to 5.1%.
- outflow personnel as percentage of total had a declining trend (from 2.5% to 1.7%)
- inflow personnel exceeded outflow personnel. Net inflow personnel percentages rose from 0.8% to 3.4%.

General description(1997~2005)1 Figure 3



General description(1997~2005)2

- Although the number of inflow personnel exceeds that of outflow personnel, the total number of personnel in government institutes has been decreasing.
- The percentage of increasing personnel in total personnel displayed a growth trend from -3.3% to 0.6%, became positive in 2005.

Basic structure characteristics

- Direction of flow
- Age structure of flow
- Education structure of flow

Direction of flow 1

- Inflow (total: 100%)
table1

from	1998	2005
government institutes	7.2	7.9
enterprises	17.2	8.5
Higher education	47.0	60.5
oversea	0.5	1.1

Direction of flow 2

- Inflow personnel were mainly from higher education, accounting for more than 40%, percentage was rising from 47% to 60.5%.
- Enterprises were also an important source. But its percentage is dropping, from 17.2% to 7.9%.
- Percentage of overseas inflow personnel was low.

Direction of flow 3

- Outflow (total: 100%)
table 2

to	1998	2005
government	14.8	22.4
enterprises	51.5	32.5
Abroad	13.8	9.1

Direction of flow 4

- Most of outflow personnel went to enterprises, accounted for 51.5% in outflow total in 1998.
- Percentage to enterprises had a declining trend and dropped to 22.4% in 2005, while percentage to government rose gradually, reached 22.4% in 2005.

Direction of flow 5

By comparing inflow with outflow in structure, we can get the following main points:

- higher education was the main source of human resources in government institutes
- Flow direction between government institutes and enterprises is from institutes to enterprises, which was beneficial for knowledge diffusion
- S&T personnel going abroad accounted for a high percentage, while overseas personnel to government institutes only occupied a low percentage.

Age structure of flow 1(2003)

	inflow	outflow	Net flow
<30	66.8	25.3	123.3
30-39	21.2	46.4	-13.0
40-49	9.4	23.8	-10.3
50-59	2.1	3.9	-0.04
>=60	0.5	0.6	-

Age structure of flow 2

- Inflow personnel were mainly concentrated on ages < 40, 88%, showed inflow personnel were mainly from higher education or with working experience
- Outflow personnel were mainly concentrated on ages 30-39, 71.7%. Those of 30-39 took 46.4%, showed outflow personnel were mainly with working experience.

Age structure of flow 3

- By comparing inflow with outflow, it can be seen that for age 30-59, especially 30-49, outflow number far exceeded inflow number . There exists “brain drain” from the institutes to other sectors or to other countries.

Education structure of flow 1 (inflow:100)

	1998	2003
With diploma of post graduate student	13.83	29.77
With diploma of graduate student	43.02	42.62

Education structure of flow 2 (outflow: 100)

	1998	2003
With diploma of post graduate student	16.3	32.0
With diploma of graduate student	46.0	43.3

Education structure of flow 3

- Inflow and outflow exhibited similar education structure: the personnel with diploma of graduate student accounted for high proportion and those with post graduate student showed a rising trend in terms of proportion.

Education structure of flow (net flow)

	1998	2003
With diploma of post graduate student	13.83	29.97
With diploma of graduate student	38.48	38.44

Education structure of flow 4

- By comparing inflow with outflow, it is shown for personnel with diploma of graduate or post-graduate student, inflow number exceeded outflow number. Among net inflow personnel the percentage with diploma of post-graduate student showed a obviously rising trend.

Influence on S&T personnel structure

More young S&T personnel with high academic degree entered the institutes, old S&T personnel retired from post. These improved the S&T personnel structure

- The quality of S&T personnel improves gradually
- Unreasonable age structure was improved

The quality of S&T personnel improves gradually

■	1997	2005
With diploma of post graduate student	7.47	17.87
With diploma of graduate student	41.35	41.49

The quality of S&T personnel improves gradually

- In 2003, the percentage of personnel with diploma of graduate or post-graduate student in total reached 59.36%, increased by 10.54% compared with that in 1997. Personnel with diploma of post-graduate student in total rose from 7.47% in 1997 to 17.87% in 2005.

Unreasonable age structure was improved (senior S&T personnel)

	<30	30-34	35-39	40-44	45-49	50-54	55-60	>60
1994	0.38	3.00	4.17	4.02	8.60	31.89	43.09	4.85
1999	0.21	6.79	21.58	14.90	14.67	13.47	22.72	5.66
2004	0.36	5.14	20.58	29.05	17.69	14.28	8.05	4.86

Unreasonable age structure was improved

- In 1994, senior S&T personnel (with senior technical titles) concentrated mainly on age from 50 to 60, accounting for 75%. In 2004, senior S&T personnel concentrated mainly on age from 35 to 54, accounting for 75%.

Main conclusions 1

- The personnel flow has improved the unreasonable age structure and enhanced the quality of S&T personnel.
- Personnel flow between government institutes and enterprises was from the institutes to enterprises, which was beneficial for knowledge diffusion.
- For S&T personnel with working experience, outflow exceeded inflow. Personnel who went abroad exceeded personnel who returned. This situation should be paid more attention.

Many Thanks