

Optimal Stipend Policy for Science and Engineering

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June 18, 2004
NSF Washington DC

What does Science Workforce Policy Seek to Maximize?

- Numbers of Graduates
- Quality of Graduates
- Field allocation
- Current science output
- Minimal Time to Degree
- Demographic distribution
- Well-being of Graduates

Economics View:

- High quality labor to advance science and engineering for economic benefit of country
- High quality labor for national security
- AS CHEAPLY AS COUNTRY CAN GET IT

Stipends have potential impact on Supply-side

Front end rewards can have large impact on decisions bcs signal and discounting

Gov't fellowships limited to citizens/residents → can affect US supply

Can alter # and \$ of awards → can affect quality and quantity; can affect TTD, attrition

Quality and Quantity

Quality measures – rather poor for early decisions
→ random selection into grad schools??

Quantity – Established programs have not increased much, so growth is in newer “lower quality”

NSB and other discussion has been about quantity

But huge effort to allocate on basis of quality

Two models of quality

- 1) Math jocks can do nothing else
raise \$ \rightarrow quality no change
raise #s \rightarrow quality down; quantity up;
- 2) Math jocks are superstars
raise \$ \rightarrow quality up;
raise #s \rightarrow quality fall (universities
accept rejectees)

Poor Measures of Quality

Need to know who is on the margin –
who might have come if better
opportunity

From attrition data, seems that
marginal leavers and completers
rather similar

Our evidence – unclear

BUT these are GRE, GPA, etc very
imperfect for measuring “true quality”

Complexities on Stipends as Tool

Govt does not control stipends nationally;
influences only

NSF does not control govt stipends

Budget constraints → #s \$s tradeoff

Alternative forms of support

- Post-Doc RA pay

- Universities/nonprofits

- Taxation

- Medical Coverage

Complexities of Stipends in Market

If stipend values increase RA, TA pay can have demand effect
puts strain on universities

If grad students become more expensive, substitute post-docs, pay greatly affected by NRSA

Some Possibilities

Differentiate \$ by field or area cost of living

Alter the timing: 5 years and out

Link to post-PhD career

- awards to increase post-doc independence

Give students a schedule that they could choose:

- \$200K for your PhD education

- if graduate in 5 years, 40K;

- if graduate in 4 years 50K

Pilot experiments – review university/non NSF experiences

Conclusion

IF SERIOUS ABOUT INCREASING US #s,
STIPENDS ARE IMPORTANT TOOL

KEY IS TO IMPROVE CAREER
ATTRACTIVENESS

FRONTLOADING PAY

HAVE TO PAY TO INCREASE SUPPLY

Radical thought

COSTS ARE MINUTE COMPARED TO
OTHER GOVT SPENDING\

BENEFITS ARE POTENTIALLY
IMMENSE