Chapter VI

SUMMARY OF FINDINGS

In this chapter we present the findings of this dissertation. We also mention the limitations of this study together with suggestions for further research.

Analysis of Earnings

We have analysed factors influencing first income and current income of engineers according to specialisations. In the analysis of first income, an attempt was made to study the impact of job search and other factors such as division, country of graduation and year of graduation on first income. And, in the analysis of current income, the focus was on the impact of: (i) different types of experience; and (ii) vintage effects, on differentials in current earnings of engineers. Attempts were also made to determine the influence of variables like division, country of graduation, marital status and tenure, some of which were also included in the study of first income.

The results of earnings function for first income and current income showed the following:

(i) Division influences significantly starting earnings of both civil and mechanical engineers, although this influence is larger for mechanical than civil engineers. A first division in the graduating examination has a definite premium over the second and third divisions while the impact of a second division on first or
current income depends on the specialisation.

(i) A degree from abroad, also influences first and current income. This influence, similar to the impact of a first division is larger for mechanical than civil engineers.

(ii) There are wage advantages associated with job search in the labour market, in leading to higher first income. Controlling for all other variables, the return to a year of job search (or elapsed time between graduation and acceptance of the first job) is somewhat higher for civil than mechanical engineers. However, with increases in job search period, higher for mechanical engineers than civil engineers.

(iv) The occurrence of higher returns to increased job search period, seems to lend support to the job search hypothesis put forward to explain graduate unemployment.

(v) Permanency of job tenure was found to be associated with higher current income than either contractual on temporary job appointments.

(vi) The marital status variable was found insignificant implying that being married has no influence on current income.

(vii) The experience-earnings profiles are well behaved for both specialisations. Over almost all ranges of experience, the rate of increases in earnings is greater for mechanical than civil engineers.
The alternative specification of the experience variable showed that the returns to experience depend upon the "type" of experience. Both previous and current job experience were found to influence current income although, the returns to initial job experience is higher for both specialisations of engineers. Furthermore, the differences between the returns to initial and current job experience is less for mechanical than civil engineers.

The vintage variables show a negative trend implying that later vintages earn less in both specialisations. Three of the most recent vintages, 1957-61, 1962-66 and 1967-71 were found to earn significantly less, than earlier vintages, controlling for all other variables among both specialisations.

Vintage effects are significantly higher for mechanical than civil engineers.

**Occupation, Earnings and Labour Supply**

We have analysed the influence of certain characteristics on occupational wage differentials by running earnings function separate with in each occupation. We also studied the determinants of labour supply of engineers into various occupations. The results of our analysis showed the following:

Division and country of graduation are two important variables which influence current income of engineers irrespective of their occupation and specialisation.
First divisioners generally earn significantly more than second and third divisioners whereas the influence of second division on current earnings depends upon both specialisation and occupation.

(ii) A foreign degree in civil or mechanical engineering offers a premium over an Indian degree, in all the occupations. The exception to this are construction and production and teaching occupations among civil engineers.

(iii) The experience-earnings profile are well behaved in both specialisations. A year of experience adds different rates of increase to monthly income in different occupations and this is generally higher for mechanical than for civil engineers.

(iv) The vintage coefficients show a general negative trend confirming that later vintages earn less in all occupations. For recent entrants into various occupations among civil engineers, teaching and administrative occupation form the least and most advantageous (in terms of low/high vintage effect) compared to other occupations. For recent entrants among mechanical engineers however, teaching and construction and production occupation form the least and most advantages occupations to enter.

(v) We have been unable to observe any general trend in the behaviour of the marital status, tenure and occupational mobility variables regarding their
influence on earnings within occupations.

(vi) The results of the estimate of the labour supply function into various occupations are in line with theoretical expectations. Our model consisting of a two-variable measure of earnings profile, namely relative first income and rate of growth of income and also including the relative job-search period denoting the relative difficulty in obtaining a job, showed that these are important factors affecting individuals' occupational choice decision. The results of our model showed that the decision to enter teaching occupation are influenced by relative starting salary and duration of job search while the decision to enter administrative occupations are influenced by relative starting salary earnings prospects and the duration of job search.

Public-Private Sector Wage Differentials

In our analysis of public-private sector wage differentials, the following are some of our major findings:

(i) The average monthly earnings of civil engineers was Rs.657 in the public (government) sector and Rs.799 in the private sector with a gross unadjusted difference of Rs.141 or 21.45 per cent (141/657) favouring the private sector. About Rs.89 or 63 per cent of the difference could be attributed to the superior wage determining characteristics of the
private sector workers and about Rs.52 or 37 per cent for the residual or the unexplained component arising because of the more liberal pay structure in the private sector.

(ii) If public sector workers were paid similar to the private sector their mean monthly earnings would increase by Rs.89 to Rs.746 but yet be less than that of the private sector. Thus the pure earnings or disadvantage the public sector workers have for similar characteristics vis-a-vis their private sector counterparts is 13.55 per cent (89 ÷ 657).

(iii) For mechanical engineers the monthly earnings were Rs.739 in the public sector and Rs.847 in the private sector. There is a difference of Rs.108 or 14.61 per cent in favour of the private sector, although no portion of the difference could be attributable to the residual or the pure surplus arising because they are paid more for similar characteristics of the public sector counterparts. If public sector workers were paid similar to the private sector, their average earnings would fall by Rs.19 to Rs.720. Thus, the pure earnings disadvantage the public sector workers have for similar characteristics to the private sector counterparts is 2.57 per cent (19 ÷ 739).

(iv) The pay disadvantage in the public sector occurs due to the payment of flat wage rather than through payment of higher returns for acquisition of wage
generating skills. In practice, as public sector pays are usually administered, neither skill acquisition nor wage augmenting characteristics such as education, training, academic performance and the like do not receive any premium unlike in the private sector.

(v) The overall unadjusted earnings differential is large for civil engineers in favour of the private sector most of which could be accounted in terms of their superior endowment of wage determining characteristics of the private sector workers.

(vi) For mechanical engineers the gross differential between the two sectors is small because of their overall higher earnings. After controlling for wage determining characteristics which favour the private sector completely, the pure differential is also significantly small. This stands in contrast with the other specialisation namely civil engineers, since the public sector pays a definite premium for wage determining characteristics for mechanical engineers.

Limitations

One important limitation of the present study is that it has not been possible to link the findings with the stock of engineers available in the country. Unfortunately, there are no reliable estimates of stock of active engineers disaggregated by discipline of specialisation for various
years from any source. If this was available it would have been possible to combine the data on stock with supply as available from university output of graduates and study the relationship between stock, supply and earnings of engineers. Possibly, this is likely to produce more robust estimates of the results found in this dissertation. Secondly, our data set does not have information about family background of the respondents. This is an important limitation from the point of view of analysing equity effects of education. It may be asked: who spends longer time in job search? Who accepts a job as soon as it is available? The answers to these questions form important links concerning equity in education and are absent in the present analysis.

Suggestions for Further Research

The analysis of public-private sector wage differentials may be extended to study the estimation of wage differential within the government - central, state, municipal or local bodies, public undertakings. It was mentioned earlier in the present analysis that although there has been repeated debates, no attempt has been made by any of the wage fixing machinaries in India to collect empirical data at the individual level on wages structure in various levels of government and private sector employment for the purpose of (i) comparison and (ii) investigation of the extent of differences of comparable people by qualification, nature of duty, sex etc., as aide for policy formulation.
There are agencies of the government involved with collection of data on employment in government or private sector establishments on a yearly basis as a routine. These agencies could be asked to select a few establishments at random both in the government and private sector and administer a questionnaire to a sample of individuals employed therein irrespective of their educational attainment to collect data on their education, sex, age, nature of duty, current earnings etc. or elicit information similar to the Census of India (1971) questionnaire on educated manpower, every year. This can be done at a small extra cost and the collected information may be analysed through the computer. If this is done for a few years, a reasonably large amount of meaningful results may be obtained on the relative attractiveness of government employment, extent of sex differentials in wages operating at various levels of government employment etc.

And secondly, the analysis of earnings attempted in the present study may also be extend to examine regional variations. The available data permits classification of engineers according to the state of their employment. The states in turn may be combined according to Government of India classification such as South India (Tamil Nadu, Andhra Pradesh, Kerala and Karnataka), Central India, North India etc. and the analysis performed for each region. Such an analysis is likely to throw light on earnings differentials by region of employment, a subject which is of interest to regional planners.
APPENDIX A

DEGREE HOLDERS AND TECHNICAL PERSONNEL CARD

(Census of India—1971 Confidential)

1. Name (Please see instructions on back. Do not write inside the squares)

Designation & Address

Male / Female

Never married / Married / Widowed / Separated

2. Year of Birth

3. Home State

7. Qualifications

org (Dip) Year of Passing Duration of course (hrs) Dir./Class Main Subject Country

9. If you have been abroad: 7. Total stay abroad (in months)

b. Year of return (last) 9. Country of longest stay

10. Subject

11. If employee, hi

12. Speciﬁcation

13. Employment

Type of organisation

Sector

Year of joining Nature of duties

14. Are you or present doing any research work?

15. If unemployed, state for how many months from?

16. Indicate period of unemployment if any during 1960-1970 after completion of your studies. (If more than four, give the last four periods)

17. Write your name in full.

If you are employed, give your office address. If not, give present residential address.

18. Type of organisation:


Nature of duties:


Total emoluments should include salary and all allowances.

** 15. Indicate position as on Feb. 1, 1971
13. Employment

<table>
<thead>
<tr>
<th>Present</th>
<th>Type of organisation</th>
<th>Sector</th>
<th>Year of Joining</th>
<th>Nature of duties</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Public</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(See list under instructions)</td>
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<table>
<thead>
<tr>
<th>The Previous</th>
<th>Total emoluments (Rs. per month)</th>
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<tbody>
<tr>
<td></td>
<td>At entry Last drawn</td>
</tr>
</tbody>
</table>

14. Are you at present doing any research work? Yes/No.

15. If unemployed, state for how many months now?

16. Indicate periods of unemployment if any during 1960-1970 after completion of your studies. (If more than four, give the last four periods).

(i) From ............ To ............
(ii) From ............ To ............
(iii) From ............ To ............
(iv) From ............ To ............

Space was provided for the signature of the respondent.

At the bottom of the card (on the obverse) instruction was noted as follows:

"Encircle ☐ appropriate alternative applicable to you in items 4, 5, 11, 12 and 14."

The following instructions were printed for the use of the respondent on each schedule on its reverse:

"Please read carefully the following:

INSTRUCTIONS FOR FILLING UP THIS CARD

You should fill up this card only if you possess a degree in Arts, Science, Engineering, Technology or Medicine, or a Technical Diploma or a Technical Certificate. Otherwise, return the blank card to Census enumerator.

Please do not write within the coding squares shown as ☐

Encircle appropriate answers in items 4, 5, 11, 12 and 14.

e.g. ☐ Male

Items

1. Write your name in full.
   If you are employed, give your office address, if not, give present residential address.

3. Home State in the State to which you belong.

7. Indicate your Bachelors' Degree(s) or equivalent and Master's Degree(s), if any, besides other qualifications.

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Items

8. In case of specialisation in more than one branch or sub-branch, indicate the best specialisation first.

9. Consider trips abroad only for study, research, training or employment.


13. Please Note:

The different employments should relate to different organisations served, not the different jobs held in the same organisation.

In case of present and previous employment, indicate nature of duties performs last; in the case of first-employment, indicate the duties at the beginning.


Total emoluments should include salary and all allowances.


Instructions to enumerators for filling up the Individual Slip (main census schedule of 1971 Census; relating to the issue and collection of the Degree Holders and Technical Personnel Card (Schedule) were as follows:

"Whenever you come across graduates or post graduates as also those with a technical diploma or degree, you will have to issue him a ‘Degree-holder and Technical Personnel Card’ and ask the person concerned to fill it. You should note the location code on the card while issuing it. Put a tick (✓) after noting the educational level against question 13 immediately after you issue a card. When you collect it after some time but before you complete the enumeration of your area, cross the tick and put a circle as (×).

You will have to ensure that the card issued to all the graduates and the technical degree or diploma holders are collected back. The non-crossed tick, if any, against question 13 will show that the card has not be collected."