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Shoshana Neuman and Adrian Ziderman

ABSTRACT

Little research seems to have addressed the testing of the dual labor market model for nondeveloping economies outside the U.S. and the U.K. This paper examines the hypothesis for Israel. Utilizing individual data drawn from the Israel labor mobility survey and assigning workers to primary and secondary sectors on the basis of occupational prestige scores, earnings functions are estimated and compared for the two sectors. The results are very closely in line with predictions of the dual labor market model, thus strongly suggesting that the dual labor market hypothesis may be relevant for Israel.

I. Introduction

Following in the wake of the early work by Piore, Doeringer, and others over a decade and a half ago,¹ advocates of the hypothesis that labor markets in the United States are characterized by a dual structure have posed a direct and continuing challenge to the neoclassical model of labor markets and, in particular, its human capital investment prescription for dealing with problems of poverty and

1. The theory is developed by Piore (1969), among others; a short presentation is given in Doeringer and Piore (1971, Chapter 8).

The authors are respectively instructor and associate professor of economics at Bar-Ilan University in Israel. They gratefully acknowledge financial support from a University of British Columbia Research Grant received by Ziderman during his recent stay at U.B.C. as visiting professor. Helpful comments on the first draft of this paper were proffered by two anonymous referees. The authors' names are listed in alphabetical order.

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low pay.² Notwithstanding trenchant criticism of both the dual labor market model and its testing (see Cain 1976 and Wachter 1974), the challenge remains in force and, if anything, has been sharpened with the adoption and adaption of the dual labor market approach by economists with a more overtly radical orientation. Most recent labor economics textbooks now give due attention, though not a seal of approval, to segmentation theories; further, a distinguished commentator, recently surveying new directions in the economics of education, has seen the challenge posed by labor market segmentation as constituting one of the primary areas of concern in the economics of education (Blaug 1985).

Yet, while the profession as a whole remains, at best, unconvinced, attempts at repudiation (or confirmation) of the dual labor market hypothesis have been hampered by the anomalous nature in which the theories are couched; statistical problems and data paucity have constituted additional barriers to empirical testing in the U.S. and, particularly, in other economically advanced countries.

The paper by McNabb and Psacharopoulos (1981) in this Journal relating to the U.K., one of the few serious empirical studies of dual labor markets in advanced economies outside the U.S., may be regarded as constituting a considerable step forward methodologically in offering, through the utilization of the Goldthorpe-Hope occupational desirability scale, a device for allocating workers to the primary and secondary sectors. The advantage of using this job-ranking scale, rather than earnings (or earnings-related variables) to define the dividing line between primary and secondary segments, is that because of its low correlation with earnings, it is largely immune from criticisms of truncation bias, a weakness that has marred so many other studies (see Cain 1976). The results reported by McNabb and Psacharopoulos were mixed; years of schooling and labor market experience were found to have a significantly smaller effect in augmenting earnings in the secondary sector than in the primary one. However, the positive and significant relationships found between these human capital variables and earnings in the secondary sector—findings at odds with the predictions of the dual labor market model—were felt to raise serious doubts about the relevance of the dual labor market hypothesis for the U.K.³

The present paper, based upon data from the Israel Labor Mobility Survey, arises directly from that of McNabb and Psacharopoulos and employs a broadly similar methodology. It attempts to contribute to the ongoing debate by testing the dual labor market theory for an additional nondeveloping country, as well as including direct tests of a central ingredient of the theory which, owing to lack of data availability, eluded the attention of McNabb and Psacharopoulos. The results reported in this paper are, unlike those of McNabb and Psacharopoulos for the U.K., highly supportive of the dual labor market hypothesis.

2. A comprehensive review of the literature on dual labor markets from a neoclassical vantage point is presented in Cain (1976).

3. Similar results for the U.K. are reported by Mayhew and Rosewell (1979).

II. Methodology and Data Sources

In this paper we follow the approach most commonly used to test the dual labor market theory: regression analysis is employed to examine differences in the wage determination process in the two labor market sectors. Dividing the sample of workers into two groups, corresponding to primary and secondary sectors, separate earnings functions are estimated for each segment. Estimated coefficients in the two regression equations are examined for evidence of significant difference between the two sectors. In particular, a major prediction of the dual market hypothesis is that human capital related variables perform considerably less well as explanatory variables in secondary labor markets.

Data were drawn from the 1974 Israel Labor Mobility Survey, conducted by the Central Statistical Office, as part of its ongoing labor force survey; the Survey provided a range of labor force information relating to both the year of the survey and 1969.⁴ Following McNabb and Psacharopoulos, the male sample was categorized into two groups, corresponding to primary and secondary labor market segments, on the basis of occupational prestige ratings for Israel (Tyree 1981).⁵ Based upon an inspection of the distribution of prestige scores, a prestige rating of 31 was chosen as the demarcation point distinguishing the primary from the secondary sectors (occupational ratings in the sample ranged from 12 to 86); thus some 29 percent of the sample was assigned to the secondary sector.⁶ Female and unmarried male workers are not included in the analysis, in order to concentrate on prime workers and, given the relatively favorable job conditions available to workers in the public sector in all ranges of employment, public sector employees, too, were excluded.

Table 1 presents some general characteristics of the populations in each of the two sectors. Secondary labor market workers are, on average, older and have received fewer years of education than those attached to the primary sector, both factors leading to longer average labor market experience for secondary sector workers. No doubt the three extra years of schooling of those in the primary segment facilitated their initial entry into this sector. As expected, average earnings

4. For background details, including the survey questionnaire and cross-tabulation results, see Israel, Central Bureau of Statistics (1977).

5. Although income does enter as one of the ingredients in measuring the relative prestige of occupations, the correlation between earnings and prestige score in our sample was not found to be particularly high (0.47) so that truncation bias should not constitute a problem.

6. The selection of the cutoff point on the prestige scale must remain judgmental. The use of the 31 prestige score seems appropriate, however, not only because there appears to be at this point a break in the prestige score distribution (which is roughly bimodal) but also because the relative sizes of the resultant labor-market sections are plausible. The use of the 41 score, as suggested by a referee, would be inconsistent with the shape of the prestige-score distribution; more important, the secondary labor market would thereby contain 72 percent of the total sample, which is clearly unacceptable in that the latter market is to be regarded as secondary in size, as well as in other aspects, to the primary sector.

Table 1
Primary and Secondary Labor Market Segments: General Characteristics, 1974.

Segment Characteristics	Primary Sector Workers		Secondary Sector Workers	
	Value	Standard Deviation	Value	Standard Deviation
Age (mean)	42.5	11.6	46.9	12.2
Years of schooling (mean)	10.4	3.7	7.2	3.8
Years of labor market experience (mean)	26.0	12.6	33.6	13.5
Years resident in Israel (mean)	25.7	11.1	21.3	9.9
Index of mean annual earnings (primary sector = 100)	100.0	—	68.9	—
Percentage of Oriental origin	37.5	—	55.5	—
Hours worked in previous week (mean)	48.0	6.6	46.7	5.2
Weeks worked in past year (mean)	50.3	6.5	50.1	6.6
Years in present place of work (mean)	10.0	8.6	8.9	7.6
Proportion working in same sector in 1969	94.8	—	92.8	—
Sample size	522	—	211	—

Source: Israel Labor Mobility Survey 1974.

Note: Assignment to the secondary sector is based on a score of 31 or less on the Tyree occupational status scale.

of secondary workers are less than those of primary workers. The percentage of workers of Oriental origin is higher in the secondary sector; years of residence in Israel also is higher. Average years of work at present place of work is 10.0 and 8.9 for workers in the primary and secondary sectors, respectively. The latter statistic is surprisingly high, and is contrary to usual discussions of the situation for the U.S., which emphasizes the footloose nature of employment of secondary sector workers; it is no doubt accounted for, in part, by labor market institutional arrangements in Israel. In particular, employees, by law, receive job permanency automatically following a six-month period of continuous employment.⁷ We shall return to this issue subsequently. Finally, movement between primary and secondary sectors over a five-year period was extremely low. Although one suggested

7. Interestingly enough, the one occupational group that is not protected by this law is university academic staff. They achieve job permanency only on the receipt of academic tenure, which is usually granted not before five, and often as much as ten years after completing the doctorate.

test of the dual labor market hypothesis is to examine movement between sectors over time—low mobility would be regarded as information supportive of the hypothesis—given the high (and increasing) degree of employee attachment to present employer that characterizes Israeli labor markets,⁸ evidence of low mobility between designated primary and secondary sectors as such sheds little light on the validity of the dual market hypothesis for that country.⁹

III. Results

Human capital earnings functions, basically of the Mincer type, were estimated for the primary and secondary sectors separately: the log of individual annual earnings was regressed against the following explanatory variables: years of schooling (*SCH*), years of work experience (*EXP*, defined as $\text{age} - \text{SCH} - 6$), EXP^2 , an interaction variable $\text{EXP} \cdot \text{SCH}$, years at present place of work (*PRESWK*), years of residence in Israel (*RESID*), weeks worked in the past year (*WEEKS*), *ETHNIC*, a dummy variable indicating ethnic origin (Oriental = 1, Western = 0), and a series of dummy variables relating to industrial branch (industry, construction, commerce, transport, private services, electricity, and finance, with agriculture in the constant term). The total number of observations was reduced to 660 because of missing values. Results are presented in Table 2.

Referring first to the primary sector regression, this is well-behaved in the sense that the results all conform to expectations. Earnings are positively related to years of schooling and years at present place of work; the relationship between earnings and labor market experience is U-shaped, as found in numerous other studies. Workers of Oriental origin earn significantly less than those of Western backgrounds; no significant differences in earnings are found between industrial branches. Moving now to the secondary sector regression results, lack of significance on the human capital coefficients would be regarded as *prima facie* evidence in support of the dual labor market hypothesis; this is indeed what is found. None of the coefficients on the years of schooling and the experience variables are significantly different from zero, confirming that human capital investments do not contribute to earnings augmentation in these markets. Of considerable interest is the coefficient on the *PRESWK* term, relating to years of employment at present place of work. Dual labor market models predict both that workers in secondary markets do not generally form lasting attachments with employers and that, to the

8. For evidence of this phenomenon in Israel and a discussion of cases, see Klinov (1986).

9. Taking up a suggestion of a referee, a dummy variable *MOVEDSEG* was constructed (taking on the value of 1 if the worker moved out of his 1969 sector between 1969 and 1974, and 0 if he remained in his 1969 sector in 1974). For each sector (based on 1969 affiliation) a logit regression was run on years of schooling, standardizing for the other factors as listed in Table 2. The schooling coefficient for the secondary sector regression was not significantly different from zero, while for the primary sector regression it was negative (beta coefficient: $-.5875$) and significant at the 90 percent level ($p = 0.0877$).

Table 2
Primary and Secondary Labor Market Segments, 1974
(Dependent Variable: Log Annual Earnings)

Independent Variable	Primary Sector			Secondary Sector		
	Coefficient	Significance	t-statistic	Coefficient	Significance	t-statistic
<i>SCH</i>	0.0643	0.0001	5.10	-0.0195	0.3698	-0.85
<i>EXP</i>	0.0304	0.0020	3.11	-0.0028	0.8486	-0.19
<i>EXP</i> ²	-0.0005	0.0003	-3.65	-0.00015	0.3897	-0.86
<i>EXP.SCH</i>	-0.0009	0.0225	-2.29	0.0007	0.2248	1.22
<i>PRESWK</i>	0.0111	0.0001	4.82	0.0025	0.4463	0.76
<i>RESID</i>	0.0023	0.1437	1.46	0.0084	0.0007	3.45
<i>WEEKS</i>	0.0327	0.0001	12.03	0.0363	0.0001	8.33
<i>ETHNIC</i>	-0.0969	0.0095	-2.61	-0.1016	0.0400	-2.07
<i>IND</i>	0.1060	0.4308	0.79	0.3039	0.0012	3.28
<i>CONSTR</i>	0.0787	0.5784	0.56	0.3236	0.0029	3.02
<i>COMM</i>	0.0073	0.9591	0.05	0.2038	0.0642	1.86
<i>TRANS</i>	0.0484	0.7290	0.35	0.2697	0.0239	2.28
<i>PRIVATE</i>	-0.0466	0.7521	-0.32	0.2906	0.0550	1.93
<i>ELEC</i>	0.1844	0.2563	1.14	a	a	a
<i>FINANCE</i>	0.0828	0.5572	0.59	a	a	a
Constant	7.0934	0.0001	27.56	7.5469	0.0001	21.00
n	470	—	—	190	—	—
R ²	0.4509	—	—	0.4308	—	—

Note. The following variables are included in the constant term:

Ethnic origin: western

Economic branch: agriculture

^a No observations in these categories.

extent that they do so, years of service with the same employer fail to contribute to higher earnings because firms and individual workers do not undertake human capital investment on-the-job. However, in available tests of the dual labor market hypothesis for the U.K. (though less so for the U.S.)¹⁰ data on years of employment with present employer are generally lacking, thus precluding the possibility of testing directly this central aspect of the theory. In the present Israeli context, moreover, as we have noted above, firm-specific tenure tends, on average, to be high; thus, a strong corroborative test of the dual market hypothesis is to find a nonsignificant coefficient on the *PRESWK* variable, which in the usual neoclassical labor market context would be positive and significant. It is seen that in the present

10. Job tenure plays a central role in earlier work for the U.S. related to the dual labor market hypothesis, such as in Leigh (1978) and Kalachek and Raines (1976). In general, studies estimating wage equations using NLS data usually include a measure of firm-specific experience.

case, the coefficient is not significantly different from zero, indicating that, notwithstanding the fairly long tenure of workers with the same employer in secondary labor market employment in Israel, such employers evidently do not find it advantageous to undertake human capital investments in such workers.

Table 3

*Selected Interaction Variables from Earnings Function,
Total Sample
(Dependent Variable: Log Annual Earnings)*

Interaction Variable	Coefficient	Significance Level	t-statistic
<i>SEC.SCH</i>	-0.0839	0.0035	-2.93
<i>SEC.EXP</i>	-0.0332	0.0819	-1.74
<i>SEC.PRESWK</i>	-0.0086	0.0463	-2.00
<i>SEC.ETHNIC</i>	-0.0047	0.9429	-0.07
<i>SEC.RESID</i>	0.0061	0.0511	1.95
n	660	—	—
R ²	0.5122	—	—

In a third regression, relating to the entire sample, we test to confirm that the returns to the *SCH*, *EXP*, and *PRESWK* variables do indeed differ significantly between the two labor market segments. The dummy variable *SEC* is added to the regression (where *SEC* equals 1 or 0 depending on whether the individual is respectively in the secondary or primary labor market sector); we also enter a series of interaction variables, corresponding to *SEC* and each of the independent variables used in the first two regressions. Results are presented in Table 3, only for selected interaction variables. The coefficients on the interaction term *SEC.SCH*, *SEC.PRESWK*, and *SEC.EXP* are all negative and significant (the latter at the 90 percent level), confirming that the returns from human capital investments in the secondary sector are significantly lower than those in the primary one. The coefficient on the interaction term *SEC.ETHNIC* is not significant, indicating that ethnic origin does not exert a differential effect on earnings in the two sectors. For all of the other interaction variables (not reported in Table 3), the coefficients were not significantly different from zero.

IV. Discussion

The theory of dual labor markets in advanced economies has been developed almost entirely in the U.S. context, and empirical testing, too, has been confined mainly to U.S. data; research work reported in McNabb and Psacharopoulos (1981) in

this Journal, and also in Psacharopoulos (1978) and Mayhew and Rosewell (1979), have presented alternative tests of the relevance of the model for the U.K., with generally negative results. Little research seems to have been addressed to the testing of the model for other nondeveloping economies outside the U.S. and the U.K. This paper broadens the field in examining the hypothesis for the case of Israel, employing methodology similar to that used by McNabb and Psacharopoulos (and as followed in part by Mayhew and Rosewell) for the U.K. Utilizing individual data drawn from the Israel labor mobility survey and assigning workers to primary and secondary sectors on the basis of occupational prestige scores, earnings functions were estimated and compared for the two sectors. The results were found to be very closely in line with the predictions of the dual labor market model, thus strongly suggesting that the dual labor market hypothesis may have some considerable relevance in the Israeli context, if not more generally.

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