

**Hiring, Pay, Promotion and Job Security in an Internal Labor Market:
Evidence from the Union Bank of Australia**

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Hiring, Pay, Promotion and Job Security in an Internal Labor Market:
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This paper uses the personnel and payroll records of the Union Bank of Australia to examine its personnel policies. It is shown that the bank maintained all of the classic internal labor market features described by Doeringer and Priore and others. There were restrictions on ports of entry; internal promotion was preferred to external hiring; there was a long-term relationship between the bank and its employees, frequently lasting the entire career; the bank maintained rigid, impersonal rules concerning pay raises; wages and employment were shielded from the external labor market; and tenure was more important than outside experience or current productivity in determining wages. Finally, it is shown that neither unions nor public policy provided the impetus for the bank to adopt an internal labor market, rather it was designed to mitigate agency problems, reduce turnover, and screen employees.

It has long been recognized that labor markets are characterized by considerably more complexity and institutional adaptations than virtually any other type of market. Internal labor markets are defined by the use of administrative mechanisms, rather than the external labor market, to set wages and allocate labor. Although internal labor markets have been the subject of a growing body of research in labor economics, human resource management, and sociology, there continues to be surprisingly little analysis of their historical origins. Even Alfred Chandler, who has produced the most comprehensive historical analysis of the internal economics of the firm, has remained largely mute on issues of labor management practices. The majority of research that has been done to date has been descriptive rather than quantitative and has been restricted to American manufacturing firms.

The definition of an internal labor market is often specific to individual authors, thus direct comparisons are difficult. Following Creedy and Whitfield (1988), we will define an internal labor market by four basic features. First, labor allocation and training occur within the firm. This implies that internal promotion is preferred to outside hiring to fill upper level positions and, consequently, the ports of entry available to outsiders are limited. Secondly, workers enjoy considerable job and wage security. The relationship between the worker and firm is expected to be long-term, perhaps lasting the entire career. In addition, the firm is expected to avoid layoffs or wage cuts during down-turns in the business cycle. Third, the employment relationship is partly governed by impersonal, bureaucratic rules, such as pay scales or written rules concerning transfers and dismissals. Finally, employee pay is likely to be related to tenure at the firm as well as current output.

The most comprehensive historical analysis of internal labor markets are Jacoby's (1984 and 1985) studies of American manufacturing firms. Jacoby concludes that as recently as the 1930s, "Workers had little protection from the vagaries of the labor market. Wages and employment levels were unstable and tenure insecure. Foremen meted out rough and arbitrary discipline" (Jacoby 1985, p. 2). He further concludes that only the rise of trade unions and New Deal labor policy forced firms to modify their employment practices and adopt internal labor markets. One significant weakness of Jacoby's work is that it is largely impressionistic and contains little quantitative or firm-level evidence. More recently Sundstrom (1988) used New York State Bureau of Labor Statistics (BLS) surveys of 1,182 establishments in 60 industries and Iowa BLS surveys of 422 establishments in 65 industries to

quantify the importance of internal recruitment in the first two decades of the twentieth century. He found that for skilled workers and in large firms internal recruitment was prevalent well before the period analyzed by Jacoby. Our study is most directly comparable to Carter and Carter (1985) who examine white collar internal labor markets using personnel records from two New York City department stores immediately prior to World War I. They find that despite paying low average wages, Hearn's, a low-price store that employed predominantly women, maintained internal labor markets. There existed rudimentary job ladders, pay increased with seniority, and average ultimate tenure was longer than one would expect in a competitive labor market; however, they also find little shielding from external labor markets. On the other hand Lord & Taylor's, a more expensive and high average wage department store, did not maintain internal labor markets for its female sales employees but did for its male office employees. Relative to Hearn's, female sales employees at Lord & Taylor's experienced shorter careers, a lack of promotion opportunities, more ports of entry, and a greater return to experience relative to tenure.

In this paper we outline the human resource management practices at one firm: the Union Bank of Australia. By contemporary standards the UBA was fairly small; however, during our sample period, it was one of Australia's largest private firms. Unlike the United States, Australia had no unit banking laws. The UBA maintained branches in every state, New Zealand, several South Pacific islands, and London. At the end of 1893 it employed 681 workers in 83 branches. By 1900 the UBA employed 539 workers at 84 branches within Australia alone, and by 1930 1,011 workers at 161 branches (U/218, U/219, U/220, U/221, U/222). The bank's personnel and payroll records (U/270) have recorded the entire work histories of every employee as of November 1887 and every entrant thereafter. The records provide an unusually rich source of data; containing information on wages, position, and location for each entrant over their entire careers. We have collected and encoded the first 3 record books, which contain the 1887 cross-section of employees and entrants through March 1900.¹ All totaled, these books provide 13 annual cross-sections of personnel information and the entire careers of 1,408

¹The record books are not perfectly chronological and there is some overlap between the books. For expository purposes we refer to Book 1 as the 1887 cross section (even though two employees did not officially enter until 1888), Book 2 as the 1888-1893 entry cohorts (even though it contains 2 entrants from 1887 and 10 from 1894), and Book 3 as the 1894-1900 entry cohorts (even though it contains 5 entrants from 1893 and stops in April 1900). Book 4 has been lost, thus it is impossible to carry any cross-sectional analyses forward past 1900.

employees; approximately 25,000 man-years of wage, position, and location data.² Figure 1 shows a representative employee record from the personnel books.³ In addition to the variables listed on the personnel records we have been able to derive entry age, annual wage, annual rank, tenure, and exit age.⁴ Annual wage and rank were recorded based on their values as of October 1.⁵ In addition to the personnel and payroll records, the ANZ Archives contain several other useful primary sources, among them: summaries of pay raises based on individual merit and according to a specified pay scale during the 1880s and 1890s (U/258/1); the number of employees by branch (U/218, U/219, U/220, U/221, U/222); a 1926-27 Sub-Inspector's Report that provides detailed job descriptions and wage information for every employee at the Melbourne branch (U/93/20); a manual describing the procedures of the Bank's Guarantee and Provident Funds (U/277/2); a set of instructions for the conduct of employees (U/195/1); two memoranda from 1889 and 1898 concerning pay scales and the conduct for junior employees (U/87/9 and UK30). Finally, GDP and the price deflator used to compute real wages were obtained from Australians Historical Statistics series ANA46 and PC31.

The outline for the remainder of this paper is as follows. The first section examines the extent to which the UBA adopted the above-mentioned four characteristics of internal labor markets. The second section analyzes five competing explanations for internal labor markets and their relevance to the UBA. The third section concludes. It is shown that the UBA had adopted all of the salient features of an internal labor market well before the turn of the century. Finally, it is argued that the internal labor market served to mitigate agency problems, reduce turnover, and screen employees.

²Approximately one percent of the records have been right censored and are missing observations after 1925 or 1931. These employees would have been eligible for a pension at age 60 and we have assumed that they remained at the UBA until age 60.

³By agreement with the ANZ archives, individual names have been expunged from this analysis. Contemporary studies of internal labor markets have faced the far more severe restriction of not being able to disclose details which would enable the reader to identify the firm (Lazear 1992 and Baker, Gibbs & Holmstrom 1994a and 1994b).

⁴In addition to their annual wage employees were sometimes given a bonus or allowance. These were typically given as offsets to employees on short-term assignments relieving officers taking their annual leave, managers as housing benefits, workers in the tropics, or workers in the Western Australia goldfields. Following Baker, Gibbs & Holmstrom (1994b) we have not included allowances or bonuses in our analysis of salaries.

⁵October 1 was used in preference to December 31 because fewer employees were away on short-term assignments relieving employees on leave. There were two necessary exceptions to this rule: employees entering their first year after October 1 and employees in their final year who departed prior to October 1. In both cases we have recorded wage and rank as of the latest available date.

I. Human Resource Management Practices at the Union Bank

The UBA was organized along a classic U-form structure. The general manager and chief inspector, both based in Melbourne, were responsible for implementing most personnel policies and shared responsibility for other strategic decisions with the London office. They were ultimately responsible for hiring decisions, transfers and promotion of employees, wage changes, and dismissals.⁶ Next lowest in the hierarchy were the five state inspectors and the inspector for New Zealand, each of whom was given several sub-inspectors to help them with their work. At the branch level there existed a manager, an accountant, a few tellers, and several clerks. The largest branches also had a sub-manager and sub-accountant; the smallest combined the positions of accountant and teller. In the larger branches work was divided into departments based on function. The Melbourne branch, the largest throughout the period of our study, had 13 departments in 1916, 15 in 1921, and 15 in 1926. Most branches were small; fewer than 10 "hands" were employed at 75 of 84 branches in 1900 and 148 of 161 branches in 1930 (U/218, U/219, U/220, U/221, U/222). Following Lazear (1992) and Baker, Gibbs, and Holmstrom (1994a) we have defined jobs by hierarchical levels. The 1888-1900 entry cohorts' records contain over 100 job titles based on department and rank, but only six major hierarchical ranks: clerk, teller, accountant/teller, accountant, manager, and inspector.⁷ This hierarchy was remarkably stable; there was little change in the overall organization of the bank during the period of this study.

A. Labor Allocation and Training

Table 1 shows the distribution of entry level positions. Except for employees who came to the UBA after it took over the Bank of South Australia (BSA) in 1892, virtually all entered as a clerk, the lowest hierarchical level. All of the 303 entrants in the 1888-93 cohorts who did not have any prior banking experience began as clerks. Even employees who had prior banking experience typically began as

⁶Although the inspector and general manager bore ultimate responsibility for personnel decisions, they typically deferred to local branch managers who possessed superior information concerning employee abilities. The UBA implemented a number of formal and informal mechanisms to ensure the efficient transmission of this information (see Merrett and Seltzer, 1997 and Seltzer and Merrett, 1996).

⁷The sample contains a small number of assistant accountants, assistant managers, and assistant inspectors. Because of the small number of employee years served at these positions we have classified

clerks; for example, among the 90 employees in the 1888-93 entry cohorts with prior banking experience other than at the BSA, 89 began as clerks and 1 began as the inspector for New Zealand.

As a result of the restriction on ports of entry, internal promotion played a particularly important role in filling upper level positions at the UBA. The UBA took a number of steps to ensure that the right employees were promoted; including requiring branch managers to fill in an annual report for each employee and extensive use of transfers and job rotation. Transfers enabled the bank to obtain several independent assessments of junior employees' abilities and relieved promotion "bottlenecks" that otherwise would have occurred at small branches. Members of the 1888-93 cohorts were transferred between branches an average of 3.2 times during their career and worked at an average of 3.7 different branches. One employee moved 32 times between 14 branches. Promotion was far from automatic: 210 of the 471 members of the 1888-93 cohorts never advanced beyond clerk. A handful of employees spent over 30 years at the UBA, without ever being promoted from clerk. Table 2 provides a matrix of hierarchical transitions for the 1888-93 cohorts. Most promotions were moves of a single level, although a sizable minority skipped levels.⁸ There clearly existed a fast track to manager: workers with prior banking experience reached manager an average of 9.5 years faster than those beginning their career at the UBA, 30.3 percent of employees promoted to manager skipped at least one hierarchical level and 13.9 percent skipped two, and the correlation between time to first promotion and the time until reaching manager was .57 (Seltzer and Merrett 1996, pp. 12-13, 31).⁹ Promotions were accompanied by a substantial increase in wages; after controlling for level, promoted employees received more than double the real increment of employees who stayed in the same position (Seltzer and Merrett 1996, p. 32). In contrast to findings by Baker, Gibbs, and Holmstrom (1994a), demotions occurred quite frequently. Most demotions from teller, accountant/teller, or manager set the worker back to clerk. Surprisingly, demoted employees did not incur a wage penalty, except for former managers (Seltzer and Merrett 1996, p. 32). In addition, demotion did not signal the end of advancement prospects.

them as accountants, managers, and inspectors. Similarly, we have classified the one assistant general manager as a manager.

⁸For purposes of this analysis we have considered the accountant teller to be both an accountant and a teller. Thus, moves from clerk to accountant teller, from teller to accountant/teller, from teller to accountant, or from accountant/teller to manager are treated as jumps of a single level.

⁹This analysis excludes the 20 former BSA employees who entered the UBA as a branch manager.

New entrants to the UBA possessed high levels of general skills. The personnel records do not record education levels, however, employees were required to pass a bank educational exam covering arithmetic, history, geography, dictation, writing, reading, and spelling prior to hiring. The UBA recruited directly from secondary schools and Hill (1983) notes that completion of the fourth year of secondary school was universal (p. 6).¹⁰

Although new entrants possessed above-average levels of education, new employees had an extended period of on-the-job training during which they acquired industry-, firm-, and branch-specific skills. The previously cited evidence on promotion patterns is consistent with heterogeneity in employee abilities and different rates of human capital acquisition. Furthermore, employees with no prior knowledge of the banking industry were generally promoted slowly, if at all. Only 8.1 percent of the inexperienced workers from the 1888-93 cohorts advanced beyond clerk in their first five years. Slow promotion may imply on-the-job training for two reasons. Firstly, it would enable senior workers to share their firm-specific knowledge without fear of being by-passed in a promotion "race" (Itoh 1994, p. 257). Secondly, slow promotion would necessarily result from firm-specific skills, such as knowledge of the customer base, requiring considerable time to accumulate.

There also exists considerable direct evidence of on-the-job training. The skills most valued by the UBA were specific to the firm or even to individual branches and thus had to be learned on-the-job. All employees had to learn the bank's record-keeping procedures. Most tasks involved a degree of cooperation, thus it was important for employees to know each other (Merrett & Seltzer 1997). The branch manager and accountant were responsible for designating work and thus required considerable information concerning employees' abilities. However, the most important type of firm-specific knowledge was familiarity with the bank's customers. Tellers, particularly paying tellers, could complete their tasks more quickly and were less likely to be defrauded if they recognized the customers. The manager's knowledge of customer's and potential customers' credit-worthiness was essential to prevent bad loans. The first item in the bank's *Instructions to Officers* notes several specific skills required by branch managers:

It is the paramount duty of a manager both in and out of office to further the Bank's interests so far as lies in his power. He should keep himself in touch with local business and affairs, in order to acquire a reliable knowledge of what are good and paying concerns, and what industries his district is specially suited for. He should make himself thoroughly acquainted with the financial position of his customers, and be quick to note every change in their circumstances and the working of their accounts. A reliable knowledge of the values of property in his own neighborhood, as well as of his customers' securities, and a general knowledge of the law as affecting the business of the Bank are essential (U/195/1, p. 1).

The detailed job descriptions from the 1926 *Sub-Inspector's Report on the Melbourne Branch* contains considerable evidence of the firm-specificity involved in each employee's tasks. Table 3 presents a list of duties performed by employees in the manager's and accountant's department. Although it is difficult to determine the degree of firm-specificity in each task, it is beyond a doubt that a considerable amount of firm-specific knowledge was required.

B. Job Security and Shielding from the External Labor Market

The UBA hired employees with a view toward a long-term relationship. Rows 1 and 2 of Table 4 show the distribution of entry ages for the three data panels. It is evident that new entrants were typically young and thus potentially had a long career horizon. Even workers with prior experience tended to be relatively young. The bank rarely hired anyone over age 25 unless they had prior banking experience. Long-term employment relationships were, in fact, frequently observed. Rows 3, 4, and 5 of Table 4 show three measures of long-term service: ultimate tenure, the percentage staying at least 30 years, and the percentage retiring on a bank pension.¹¹ Ultimate tenure averaged 15.47 years for members of the 1888-1900 cohorts, 18.76 percent stayed at least 30 years, and 25.27 percent retired on a bank pension.¹²

¹⁰The fourth year of secondary school is equivalent to grade 10 in the United States. Upon completion of the fourth year the student was entitled to a certificate. Prior to the turn of the century completion of the fourth year was a relative rarity.

¹¹For the purposes of analyzing long-term service pattern cross-sectional and entry cohort data are not directly comparable. A long-term employee is more likely than a short-term employee to be sampled in a given cross-section. Thus the cross-sectional data provides upwardly biased estimates for measures of ultimate tenure.

¹²We have assumed that the 31 employees who's records were truncated after 26-40 years service retired on a bank pension. Even under the implausible assumption that each of these employees quit, 21.72 percent of the 1888-1900 cohorts retired on a bank pension.

Both jobs and wages were shielded from the external market to a considerable extent. In a spot market one would expect turnover to be high, quits to be pro-cyclical (as a result of alternative job opportunities improving during upturns in the business cycle), and dismissals and retirements to be counter-cyclical (as a result of firms economizing by reducing staff during downturns in the business cycle). Figure 2 shows the relationship between the business cycle and the separation rates between 1887 and 1899. The overall exit rate was surprisingly low, ranging between 4.9 and 9.6 percent annually over the period.¹³ The quit rate was pro-cyclical; its correlation to GDP growth was .68 (statistically significant at the 1 percent level in a one-tailed test). The death, dismissal and retirement rate was extremely low, averaging 2.53 percent over the period and remaining below 4 percent even during the depression of the 1890s. It was also weakly counter-cyclical; its correlation to GDP growth was -.47 (statistically significant only at the 10 percent level in a one-tailed test). The low exit rates and weak counter-cyclicalities of deaths, dismissals, and retirements suggest that UBA employees enjoyed considerable job shielding from the business cycle.

In addition to job shielding, UBA employees also enjoyed considerable wage shielding. Nominal wages were very sticky downwards, and were generally only cut during periods of rapid deflation or as a disciplinary action. Nominal wage cuts were not used as a normal mechanism to bring pay in line with productivity. For the 1888-93 entry cohorts only 246 of 7,320 nominal increments were negative and 186 of these occurred as a result of the 10 percent across-the-board pay cuts during the depression years 1895 and 1931. We further suspect that some of the remaining 60 negative increments resulted from temporary allowances being incorrectly recorded as wage increases.¹⁴ Real wages were somewhat more flexible; over 27 percent of real wage increments for the 1888-93 cohorts were negative and certain workers faced negative wage growth over extended portions of their careers (Seltzer and Merrett 1996a, p. 19). However, because of downwards nominal wage rigidity, in the short-run real

¹³This compares favorably with turnover figures for modern manufacturing, which typically range from 12-36 percent (Ehrenberg and Smith 1994, p. 326); to a medium size firm in a service industry studied by Baker, Gibbs & Holmstrom, which had turnover rates about 6-15 percent over a 20 year period (p. 887); or to the Ford Motor Company, which had turnover rates of 370 percent in 1913 but only 16 percent by 1915 after the implementation of the five-dollar day (Raff 1988, p. 389).

¹⁴Frequently, short-term replacements for workers on leave were given a replacement allowance. If the replacement allowance was recorded as a wage rather than an allowance, it would result in an apparent negative increment the following year if the employee went back to their permanent assignment and no longer received the allowance.

wage flexibility was limited by the rate of inflation which averaged less than one percent annually between 1887 and 1943.¹⁵

C. Rules or Discretion

The UBA maintained a standard pay scale for the early years of tenure well before it was mandated by government legislation. Between 1889 and 1898 the pay scale stipulated the standard salary for an inexperienced worker "of average ability ... under ordinary circumstances" for the first seven years with the bank were to be as follows: year 1 - £40, year 2 - £60, year 3 - £80, year 4 - £100, year 5 - £120, year 6 - £135, year 7 - £150 (U/87/9). In 1898 the scale was amended to cover only the first 3 years at salaries of £30, £40, £50 (UK30). However, the fact that rules existed does not guarantee that they were binding.¹⁶ The scale was not a promise and the bank's rules state that "merit will be in all cases the first claim to consideration" for salary increases (U/195/1, p. 5). The volume *Letters to I. & G. M.* provides data on total salary increases, increases according to scale, and the net profitability of the bank that can be used to test whether the "merit rule" was used as a loophole to avoid paying scale increases during economic downturns. Figure 3 shows salary increases according to scale, salary increases not according to scale (discretionary increases) and the net profitability of the bank between 1882 and 1897. Contrary to what one would expect if the scale were not binding, discretionary increases and scale increases were not correlated to each other or to net profitability.¹⁷

In addition to the explicit pay scale governing the first seven years of tenure, the bank appears to have maintained implicit rules which artificially compressed the distribution of wages during subsequent years. Figure 4 shows some features of the distribution of wages for members of the 1894-1900 entry cohorts who entered with no prior experience and remained at the UBA for at least 30 years. These workers were remarkably similar in terms of *ex ante* and *ex post* characteristics such as entry age (the standard deviation of which was only 2.2 years), career length (the standard deviation of which was

¹⁵There was an extended period of deflation at the beginning of our survey period. The retail price index dropped by one third between 1887 and 1897 (*Australians Historical Statistics* PC 31, p. 214). This extended deflation resulted in substantial upwards real wage drift, despite the ten percent across-the-board cut in 1895.

¹⁶Baker and Holmstrom find clear evidence of this from interviews with managers. They cite one manager who "flatly stated that he has 'enough tools in his bag' to get around whatever constraints the formal system imposes" (Baker and Holmstrom 1995, p. 257).

only 4.05 years), and reason for exit (36 retired on a pension, 1 died, 1 was forced to resign, and 12 records were truncated in 1925 or 1931).¹⁸ However, it is likely that these employees were heterogeneous in terms of abilities that can not be measured by us, but were observable to the bank. The distribution of wages remains remarkably compressed even after the pay scale ended and, in fact, the standard deviation of wages was lower after 19 years tenure than in the first year of tenure. Itoh (1994) argues that a similar late selection approach characterizes work in Japanese firms.

D. Relationship between Tenure and Earnings

As shown in figure 4, the real earnings of most UBA employees continued to rise over their entire careers. This was true at all levels of the wage distribution, regardless of whether the employee was ever promoted.¹⁹ By construction this result cannot be the effect of selective exits over the first 30 years, because the statistics are for the same group of employees. Figure 5 shows the median wages for inexperienced and experienced workers from the 1888-1893 and the 1894-1900 cohorts. It is evident that each group of workers received considerable deferred compensation and that there was an acceleration in compensation after 25-32 years tenure. Table 5 shows the percentage of the career total real wage increase occurring at various levels of tenure for employees with an ultimate tenure of at least 30 years. It can easily be seen that there was considerable deferral of compensation and less than half of all wage growth occurred in the first 10 years. The upwards slope and concavity of the wage profile during the first 23-29 years of the career are consistent with wages being related to productivity through a human capital or matching effect; however, the continued and accelerated wage growth later in the career suggests that tenure *per se* was important to wage determination. Furthermore, all of the above data understate the impact of tenure on total compensation because housing allowances were generally not given to junior employees and because the bank's pension plan was end-loaded.²⁰

¹⁷Nor were they correlated to GDP growth.

¹⁸By comparison for all members of the 1894-1900 cohorts the standard deviation of entry age was 4.0 and the standard deviation of ultimate tenure was 14.28. It is reasonable to assume that most or all of the 12 employees whose records were truncated after 28-38 years of service retired on a pension.

¹⁹The only significant exception from our sample is that the bottom quartile of the 1888-93 cohorts had negative real earnings growth from approximately the twentieth to the thirtieth years of their tenure.

²⁰The 1929 rules for the Banks Guarantee and Provident Funds allowed employees to retire on a bank pension at age 55, or earlier if they became medically unable to continue working. The standard retirement age was 60 and the mandatory retirement age was 63. Employees accrued 1/40 of their average salary over their final 10-20 years of service for each year of employment (*U/277/2*).

To analyze the importance of tenure to earnings more formally we have run a number of regressions on the natural log of wages using pooled cross-sectional and time series data from the 1888-1900 cohorts. As independent variables we have included dummy variables for level (Teller, Accountant/Teller, Accountant, Manager, and Inspector); age at entry (AGE); dummy variables for prior banking experience and prior European banking experience (BANKEXP, EBANKEXP); years of experience, its square and cube (YRSEXP, YRSEXP SQ and YRSEXP CU); year of entry dummies; and tenure at the UBA, its square and cube (TEN, TENSQ and TENCU). Most employees remained at the UBA for more than one year and thus will have multiple observations in the regression data, which results in non-independence of the errors using OLS methods.²¹ Consequently, we have also run a fixed effect specification based on deviations for individual means to provide a degree of sensitivity analysis. The regression results are reported in table 6. The coefficients all have the expected signs. As a first pass (columns 1 and 2) we have only included controls for level. These regressions explain only about ** percent of variation in wages; in contrast to results from Baker, Gibbs and Holmstrom (1994b) who find that level alone explains about two-thirds of variation. Another important result is that the coefficients on the level dummies are lower in absolute value and statistical significance in the fixed effect specifications (columns 2 and 4) than in the OLS specifications (columns 1 and 3). This suggests that individual ability played an important role in the bank's decision to assign individuals to positions. Most of the coefficients on year of entry were statistically significant in the specification with no controls for individual characteristics (column 5), but none were significant after these controls were included (column 6). By contrast Baker, Gibbs and Holmstrom (1994b) find large and persistent year of entry effects which they interpret to be a form of wage shielding. The most important regression result is the relative importance of tenure at the UBA and experience elsewhere to wage determination (columns 5 and 6). The coefficients on tenure are of considerably larger magnitude than those on experience. Contrary to the predictions of the human capital and matching model, columns 5 and 6 imply that the tenure-earnings profile was continually upward sloping and the marginal value of an additional year of tenure begins to increase after about 23 years.

²¹Specifically, the OLS errors will be correlated to unobserved ability.

II. Why Did the Union Bank Adopt an Internal Labor Market?

The conclusion that the UBA operated an internal labor market is of particular importance from a historical perspective. Many of the human resource management practices that Jacoby (1984) claims began in American manufacturing firms only in the 1920s were fully operational at the UBA in the late 1880s. This section examines the relevance of the competing explanations for internal labor markets using the evidence from the UBA. Five explanations have been offered for the existence of internal labor markets--union activity, public policy, mitigation of the principal-agent problem, reducing turnover, and screening workers. Jacoby (1985) concludes that unions and public policy were the sole reasons for the historical rise of internal labor markets and explanations based on the agency relationship, reduced turnover, and screening are merely "ex-post-facto rationalizations" (p. 9).

i. Union activity: It has long been recognized that unions prefer internal labor markets to the uncertainties of managerial discretion. Jacoby (1984 and 1985) claims that union activity was the single most important factor in the rise of internal labor markets in American manufacturing industries. Unions have been responsible for moves toward internalization of labor markets through both collective bargaining and the threat effect--voluntary employer imposition of work place rules or higher pay in order to pre-empt union organizing activity.

We do not believe the union movement to be of any importance to the UBA's human resource management policies. There were no banking unions in Australia prior to 1919, and unions remained relatively inactive prior to the Second World War (Hill, 1983). The threat effect does not appear to be a plausible explanation either. The union movement was decisively defeated in the strikes of the 1880s and could not have been regarded as a sufficient threat to force the bank to adopt policies so far removed from a spot market for labor if the bank did not desire such policies.

ii. Legislation: Jacoby (1984) argues that legislative changes were the other major contributing factor to the rise of internal labor markets in American manufacturing firms. He argues that two pieces of legislation had a particularly important effect on the internalization of labor markets: the National Industrial Relations Act (NLRA) facilitated the process of unionization and the Fair Labor Standards Act introduced book-keeping requirements that forced many firms to introduce personnel departments.

Government legislation also appears to have had no relevance to the bank's implementation of an internal labor market. Hill (1983) notes that at the turn of the century "government intervention into the banking industry was almost non-existent" (p. 2). Australia's highly centralized "awards" system--did not begin until the Sunshine Harvester Case of 1907 and evolved only incrementally thereafter. The awards had little or no influence over the careers of the employees in our sample. The banking industry was not covered by an award until the passage of the New South Wales Award in 1920, the Queensland Award in 1922, and the Federal Award in 1924, each of which proscribed wages covering the first 14-18 years of tenure and regulations concerning hours of work, overtime, leave, allowances, and procedures for dismissal. The wage scales contained in the 1920, 1922, and 1924 awards were recommendatory and could be ignored for "sub-standard" workers at the discretion of the bank. They also did little more than formalize existing procedures; the scale proscribed by New South Wales Award (which also served as the basis for the Queensland Federal Awards) was simply taken from the salaries paid by one bank in 1913 (19CAR, p. 278).²² At the federal hearings a representative of the UBA stated, "In all cases managers in the service of this bank are paid salaries equal to and in a number of cases much in excess of the figures set out in the Queensland Award" (19CAR, p. 288).²³ Although the award system may have formalized the UBA's internal labor market, it clearly was not responsible for its development. The employees in our sample had completed their first 18 years of tenure prior to the implementation of the New South Wales, Queensland or Federal Awards and thus were not covered by the pay scale.

iii. The principal/agent relationship: As in many agency relationships, the bank employees (the agents) almost certainly had different and superior information to the bank (the principal). This informational advantage undoubtedly would have been utilized by UBA employees to act opportunistically had the bank not taken actions to prevent this. There clearly was a divergence of interests between the bank and its employees, and both adverse selection (hidden information) and moral hazard (hidden action)

²²The Commonwealth Arbitration Record does not state which bank the scale was taken from, however, it was not the UBA. In another paper we examine the impact of the Banking Award using a sample of personnel records from 360 inexperienced entrants between 1917 and 1927 (Seltzer 1997). Prior to 1920 the UBA paid lower rates than proscribed under the NSW Award, which was to serve as the model for the Federal Award. In 1920 the bank brought its rates up to the NSW Award schedule for its junior employees throughout Australia.

²³Unlike the Queensland Award, the federal Award did not proscribe a separate scale for managers.

may have potentially been significant problems for the bank. The prospect of above-market earnings may have attracted a number of workers who lacked the attributes desired by the UBA.²⁴ In addition, employees may have preferred to put forth less effort than desired by the bank; they may have wished to pursue a separate agenda in daily business activity (for example making risky loans to friends); and most importantly they had the constant temptation to steal from or defraud the bank.

We believe that several features of the UBA's internal labor market were designed to mitigate both the adverse selection and moral hazard problems. One purpose of a long-term relationship with deferred compensation may have been to attract conservative, future minded employees and thus reduce the problem of adverse selection. The considerable end-loading of compensation would likely have induced more present-minded potential employees to seek alternative employment with a flatter earnings profile. For example, consider a hypothetical individual who entered in 1892 at age 18, had no prior work experience, received the median income for employees with no prior experience in each year of his tenure, worked until retirement at age 60, and received a bank pension until his death at age 66.²⁵ If this individual had a personal discount rate, δ , of 0.0, their discounted real lifetime earnings including pension, E , would have totaled £11,562.26. However, for $\delta=0.01$, $E=£8,903.68$; for $\delta=0.025$, $E=£6,219.18$; and for $\delta=0.05$, $E=£3,722.18$.

Several other features of the internal labor market acted to reduce the problem of moral hazard. The annual supervisors' reports helped to catch employees who attempted to shirk. There were restrictions on the branch managers' ability to make loans to friends. They needed approval from the head office to issue large loans and were required to submit details of their branch's balance sheet on a weekly or biannual basis. Most importantly, the UBA developed an elaborate and extensive system of monitoring its workers in order to prevent theft and fraud, which, if widespread, would surely have brought the bank financial ruin. We are more carefully analyzing the nature and function of the monitoring system in another paper (Merrett and Seltzer 1997); however, some of the salient features of the system are

²⁴The literature on white-collar wages in Australia is underdeveloped, thus it is difficult to determine exactly what alternative wages were for UBA employees. However, the low quit rates and the fact that a high proportion of those quitting did so to leave the country or pursue farming suggests that the UBA paid above-market rates.

outlined below. Most book-keeping was performed independently by two employees in order to ensure that clerks did not defraud the Bank; there was a strict separation between paying or receiving cash and preparing the books; accessing cash or gold required two keys, each of which was held by a single high ranking official; and, perhaps most importantly, the account books had to be balanced at the end of the working day before the employees were allowed to leave. The most common tasks performed by employees at the Melbourne branch were checking others' work, which was performed by 36 tellers and clerks, and balancing or calling over account books, which was performed by 20 clerks (U/93/20). Employees' behavior outside of work was also monitored. The bank prohibited activities that might have created a need for cash and thus increased the temptation to steal, among them: public intoxication, gambling, accumulating debts, undertaking bail, speculating or dealing in mining shares, engaging in other business, or getting married on an insufficient salary (U/195/1, pp. 2, 3, 8). Even retired employees were monitored and faced the loss of their pension if they acted in a "manner prejudicial to the interests of the Bank" (U/277/2, p. 10). Bookkeeping irregularities, theft, and improper personal behavior were causes for immediate dismissal—an action the UBA took with 62 employees in the 1888-1900 cohorts.

The monitoring system by itself would not have been affective unless dismissal were costly to employees. In fact dismissal was very costly. A dismissed employee would miss out on the deferred compensation and have considerable difficulty finding another job at comparable wages. In addition dismissed employees faced a loss of their pension and the forfeiture of their contribution to the bank's Guarantee and Provident Funds, which, depending on age of entry and wage rate, ranged from 4.1 to 9.5 percent of their annual salary. Another aspect of the internal labor market that facilitated monitoring was transfers between branches. In addition to facilitating promotion, frequent transfers ensured that fraudulent activities would be quickly discovered. Upon commencing a new position, an employee would likely discover any manipulation of records by his predecessor.

²⁵In many ways this is a "typical" UBA employee. The majority of the 1888-90 cohorts had no prior experience, 18 was the median entry age for employees with no prior experience, and 60 was the standard retirement age proscribed under UBA rules (U/270 and U/277/2).

In addition to assuring that employees worked to suitable minimum standards, several features of the internal labor market may have provided positive incentives for employees to supply above-minimum levels of effort. The policies of lengthy tenure and slow promotion based on supervisor evaluations may have acted to ensure that above-normal effort levels would ultimately be rewarded. The Bank's use of tournaments to determine promotion to the top positions would likely have encouraged the most capable employees to choose high effort levels.²⁶ In addition, the elaborate set of rights and expectations created by the system might have been regarded by employees to be more fair than a system based on managerial discretion and thus increased employee loyalty to the bank.

iv. *Reduced turnover:* Several features of internal labor markets are likely to reduce turnover. Deferred compensation raises the opportunity cost to employees of leaving and thus creates an incentive to remain on the job. An employee leaving the UBA would lose their increased returns to tenure and their bank pension. Employee perceptions of fairness in the system might have also reduced turnover by inducing loyalty to the bank.

This model of internal labor markets is likely to have been relevant if there existed high one-time quasi-fixed costs that the bank could have spread over the employee's career. These costs could have resulted from the process of searching for and hiring new employees, on-the-job training, or separations. The evidence indicates that quasi-fixed costs were high for the UBA. As noted in the previous section, there was an extended period of on-the-job training for new employees. Search and hiring costs appear to have been high as well. Branch managers were expected to "keep in touch with Headmasters [of] High Schools or Colleges, with a view to ascertaining whether suitable youths are desirous of obtaining employment in the Bank" (U/195/1, p. 7). The bank's rules stated that prior to the final hiring decision the Inspector had to approve a candidate and the candidate had to obtain a certificate from the Bank's medical examiner, pass a bank educational exam, and post a bond with the

²⁶In another paper we have examined promotion tournaments at the UBA (Seltzer and Merrett, 1996). The payroll data support a number of prediction of the tournament model. Wages were compressed in the lower 90 percent of the distribution, but disbursed in the top 10 and particularly top 5 percent of the distribution. Wages within branches were particularly compressed; at the Melbourne branch in 1926 only the manager, sub-manager and, accountant earned more than 1 standard deviation above the branch mean. In addition, employees competing for promotion to the top positions were located in different branches, thus could not have advanced by sabotaging their competitors, to the detriment of the bank. See Lazear and Rosen (1981) for a discussion on the incentive effects of promotion tournaments.

bank's Guarantee and Provident Fund (U/195/1, pp. 7-10). Undoubtedly far more resources would have had to be devoted to these search, hiring, and training functions had the turnover rate been higher.

V. *Screening:* An internal labor market may act as a screening mechanism when employees have differences in abilities and *ex ante* measurement of those differences is difficult. To the firm an employee's work ethic, carefulness, and other work attributes may more closely resemble experience than search goods.²⁷ The screening function of internal labor markets is likely to be most important if poor performance by high level employees would have imposed high costs on the firm. We believe that this explanation is also highly relevant for the UBA. Poor employee performance in the form of faulty or fabricated records, poor loan decisions, or alienation of the customers would have been ruinous to the bank. A number of features of the UBA's internal labor market may have served a screening function. The bank's *Instructions to Officers* explicitly noted that the policies of supervisor assessment and job rotation served a screening function. With regard to the annual reports the instructions state, "It is particularly desired that a specific answer be given ... as to the qualification for any other post" (U/195/1, p. 4.) With regard to rotation it states, "in order to increase the efficiency of the general staff and to improve the chances of promotion, officers will from time to time be transferred from one position to another" (U/195/1, p. 5). The policies of internal promotion, slow promotion, promotion tournaments, and limited ports of entry can also be viewed as mechanisms to obtain information about employee abilities and to ensure that only suitably qualified employees reached high level positions.

III. Conclusions

This paper has used personnel, payroll, and other archival records to examine internal labor markets at the Union Bank of Australia between the late 19th century and the Second World War. The evidence indicates that the bank maintained all of the classic features of an internal labor market as described by Doeringer and Priore (1971), Creedy and Whitfield (1988), and others. Except for a number of employees who began at the UBA after its takeover of the Bank of South Australia in 1892, there was effectively a single port of entry available to outsiders, at the level of clerk. Upper level positions were almost universally filled from within. Promotion occurred along a fairly fixed ladder, although a

number of employees skipped levels. The relationship between the bank and its workers was long-term, frequently lasting the entire career. Workers also enjoyed considerable protection from the business cycle: turnover and dismissal rates were very low even during the depression of the 1890s and there existed considerable nominal and limited real wage rigidity. There existed a binding set of explicit and implicit rules concerning pay and promotion. Finally, tenure with the firm had as an important an effect on pay rates as current productivity.

The paper also examines which of the competing theories best explains the adoption of an internal labor market by the UBA. It is shown that there were no labor unions or relevant public policy prior to the turn of the century, thus Jacoby's explanation for American manufacturing is not directly relevant. It is also shown that the UBA had developed a comprehensive system of monitoring workers as a defense against theft, and that several features of the internal labor market complemented or directly facilitated the monitoring system. Finally, it is argued that the internal labor market reduced turnover and acted as a screening mechanism. It was important for the UBA to have a low turnover rate because the costs associated with search, hiring, and training were high. The bank also had imperfect information concerning the abilities of individual workers or the match between workers and jobs, and an internal labor market reduced the probability of a poor match at high level positions.

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¹⁷The attributes of a search good can be determined by inspection prior to purchase. The attributes of an experience good are only gradually revealed after observing performance subsequent to purchase.

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Table I
Distribution of Entry Ports

Entry Cohort	1860-69		1870-75		1875-79		1880-84		1885-87		1887-94: not BSA		BSA Employees		1894-95		
	1887 survivors	1887 survivors	1887 survivors	1887 survivors	1887 survivors	1887 survivors	1887 survivors	1887 survivors	All Entrants	1887 survivors	All Entrants	All Entrants	All Entrants	All Entrants	All Entrants	All Entrants	
Clerk	47	26	85	136	146	394	51	449	0	0	0	0	0	0	2	0	
Teller	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0
Acct./Teller	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Accountant	1	0	0	1	0	0	1	0	0	0	0	0	0	5	1	1	0
Manager	0	0	1	1	4	1	1	4	1	0	0	0	20	4	4	4	0
Inspector	0	0	0	0	1	1	0	1	1	1	1	1	0	0	0	0	0

Figure 2
Job Transition Matrix

New/Old Position	Clerk	Teller	Acct./Tell.	Accountant	Manager	Inspector
Clerk	---	69	52	35	43	0
Teller	128	---	19	10	0	0
Acct./Tell.	108	31	---	11	2	0
Accountant	76	19	27	---	8	1
Manager	46	6	29	59	---	12
Inspector	5	0	0	1	15	---

Source: U/270.

Table 3
Tasks Performed in the Manager's and Accountant's Departments, Melbourne Branch 1926

Officer	Tasks
Manager	Management of Branch
Sub-Manager	Assisting the Manager
Advance Clerk	General supervision of Advance Department; Attends to L/O special correspondence; Compiles Minutes (ordinary series); Calls over minutes and A/Reports; Attends to correspondence re advances; Checks alterations to B/I and A/R; Checks A/Reports; Records limits on ledger cards; Checks overdraft list; Searches Mercantile Gazette daily
1st Assistant	Prepares A/Reports and overdraft list; Amends special arrangement sheets, minutes, A/Reports, Manager's and Sub-manager's diaries; Checks record of advances (card system); Checks Ledger Limit Cards; Compares special arrangement sheets with minutes, A/Reports, Manager's and Sub-manager's diaries; Takes over Local and Colonial bills weekly
Clerk	Attends to customers calling on Manager and Sub-manager; Writes up record of advances (card system); Indexes Manager's and Sub-managers diaries; Keeps register of letters received from general manager and L/O special letters; Files, indexes and records comments on minutes and A/Reports; Files branch advance letters received and indexes all letter books in the department; Calls overdraft list monthly; Checks officers time extraction book; Alters B/I and A/R
Typiste	Types minutes, A/Reports and correspondence of the department; Types notes for the manager's loose-leaf diary
Accountant	Supervision of the office
Sub-Accountant	Attends to and records local and branch credits; Relieves accountant at lunch hour; Attends to payment of bank pensions; Compiles half yearly return of special exchange transactions and return remittances to and from London; Checks daily the entering up of remittances received in branch banks and clearing branch account registers; Checks credits for remittances received through the post from customers direct and from branches; Opens new accounts; Checks entries passed from London office; Checks daily return of fixed deposits receipts and accounts opened and closed; Checks weekly statements of transactions with foreign agents; Checks authorities; Checks statement of London and agent bills payable weekly; Checks asset and liability book; Signs branch letters, fixed deposit receipts, bank cheques, interim interests warrants, telegram cables and London office and agents' drafts; Counts tellers' cash (three tellers monthly); Keeps counter cheques for sale; Signs dishonour notices for cheques;
Audit Officer ²⁸	
Accountant's Clerk	Keeps staff records and correspondence; Compiles staff minute and daily and monthly staff records; Compiles fortnightly overtime statements; Checks officers times and records same in time extraction book
Assistant to Sub-Accountant	Prepares daily return of fixed deposit receipts

²⁸ No position description is available for the audit officer

<p>and accounts opened and closed</p> <p>Enters up remittances received in the branch banks and clearing branch account registers every day</p> <p>Makes out credit for remittances received through the postform, customers and branches</p> <p>Assists with weekly statements of transactions with foreign agents</p>

Table 4
Entry Age and Ultimate Tenure, Grouped by Prior Experience

	1987 Gross-Sect 000		1988-1989 Cohorts		1990-1991 Cohort		1992-1993 Cohort		1994-1995 Cohort	
	No Prior Experience	Non-Banking Experience	Banking Experience	No Prior Experience	Non-Banking Experience	Banking Experience	No Prior Experience	Non-Banking Experience	Banking Experience	No Prior Experience
Median Entry Age	17.47	19.98	24.11	17.37	19.25	25.68	17.40	19.79	24.79	17.40
% of Entrants Under 25	95.08	85.00	53.38	93.12	83.72	57.32	99.61	91.89	52.04	99.61
Mean Ultimate Tenure	24.31	18.73	20.40	16.78	16.46	17.36	13.11	14.92	15.16	13.11
% Staying 30+ Years	42.15	35.01	31.58	10.16	25.00	23.78	19.08	25.00	23.53	19.08
Observations	325	20	133	248	56	166	262	72	102	262

Source: U/270

Table 5
Percentage of Total Wage Growth Occurring at Various Levels of Tenure

	1888-93 Cohorts	1894-1900 Cohorts
Years 1-5	29.80	17.49
Years 6-10	14.01	15.90
Years 11-15	9.39	11.89
Years 16-20	12.35	3.95
Years 21-25	1.24	5.52
Years 26-30	-0.43	31.42
Years 30+	33.64	13.84

Note: Figures include 107 1888-93 cohort members and 89 1894-1900 cohort members who remained at the UBA for 31 or more years.

Table 6
Pooled Regressions on the Natural Log of Earnings

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	LN(RW)	LN (RW)	LN (RW)	LN(RW)	LN (RW)	LN (RW)
Teller	0.439*** (24.44)	0.345*** (21.35)	0.048*** (3.53)	0.0021 (0.21)	-0.025** (2.24)	-0.049*** (4.47)
Accu/Tell	0.344*** (21.33)	0.332*** (24.83)	-0.039*** (3.13)	0.0036 (0.44)	-0.031*** (3.03)	-0.035*** (3.53)
Accountant	0.624*** (33.55)	0.447*** (28.34)	0.202*** (14.18)	0.060*** (6.27)	0.102*** (8.48)	0.077*** (6.55)
Manager	0.934*** (87.70)	0.738*** (71.63)	0.387*** (39.85)	0.111*** (14.82)	0.233*** (27.13)	0.208*** (24.77)
Inspector	1.393*** (42.96)	0.871*** (30.25)	0.869*** (35.52)	0.261*** (15.07)	0.567*** (25.60)	0.557*** (25.97)
AGE					0.021*** (17.34)	0.021*** (18.03)
BANKEXP					0.106*** (9.79)	0.102*** (9.70)
EBANKEXP					0.161*** (14.60)	0.141*** (12.79)
YRSEXP					0.039*** (10.06)	0.044*** (11.87)
YRSEXP SQ					0.0058*** (9.40)	0.0057*** (9.52)
YRSEXP CU					0.0003*** (10.04)	0.0002*** (9.49)
TENURE			0.173*** (73.37)	0.165*** (109.55)	0.181*** (91.39)	0.180*** (94.06)
TENURESQ			-0.0074*** (53.80)	-0.0067*** (79.10)	-0.0076*** (66.11)	-0.0075*** (67.73)
TENURE CU			0.0001*** (46.24)	0.0001*** (69.43)	0.0001*** (57.78)	0.0001*** (59.07)
Year of Entry Dummies	NO	NO	NO	NO	NO	YES
Model Specification	OLS	FE	OLS	FE	OLS	OLS
Constant	4.8720*** (853.96)	0.0013 (0.45)	4.0820*** (428.70)	0.0031* (1.72)	3.520*** (151.71)	3.62*** (94.23)
Valid Observations	14198	14198	14198	14198	12357	12357
Adjusted R ²	.395***	.294***	.675***	.762***	.804***	.816***

Notes: * = Significance at a 10 percent level.
 ** = Significance at a 5 percent level.
 *** = Significance at a 1 percent level.

Absolute value of the t-statistic in parentheses.

Source U/270

Figure 1
A Sample Personnel Record

Note 24 February
 Engaged for Bank's Service at *Brisbane* 1867
 Sailed for 15
 Passage paid by
 Entered Service at *Brisbane* on 15 February 1864
 Details of previous experience

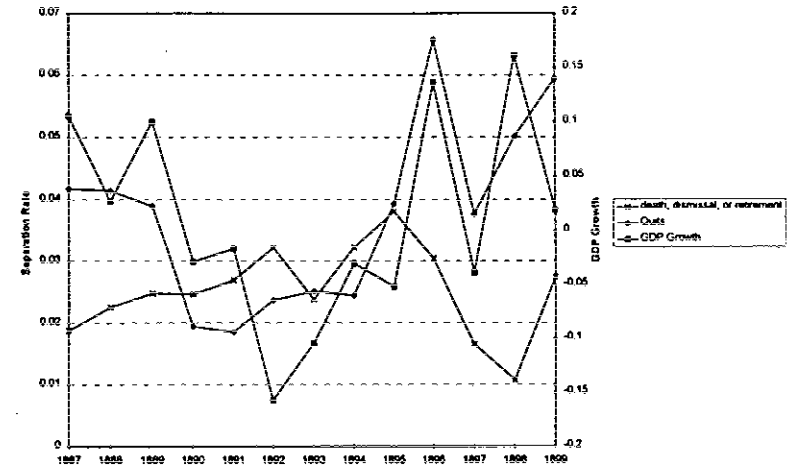
PARTICULARS OF BOND OF FIDELITY.

Date	In force from	Amount	Provision	Time	Particulars thereon
Agreement signed to serve the Bank for _____ years, terminable at _____ months' notice.					
No.	Admitted For Term	When Employed	RANK	SALARY	REMARKS
	1867	Brisbane	clerk	80	
	1868			100	
	1869			125	
	1870			150	
	1871	Wellington		150	
	1872			165	
	1873	Kelson		165	
	1874	Charleston		175	£50 per month allowance (from 1 st July)
	1875	Melbourne		175	
	1876	Inspector Office			
	1877	Dunfermline		185	
	1878			200	
	1879	Manchester	Acting Manager	200	£50 allowance
	1880		Manager	300	
	1881	Dunfermline	Manager	300	
1045	1882			350	
1165	1883			350	
1283	1884	Orkney		350	Living for Orkney £100
	1885	Dunfermline		350	Residence duty
137	1886	Rockhampton	Act. Man.	£50 £100	allowance while in charge
159	1887		Act. Manager	£50 £100	allowance £150 Sep. allow.
395	1888		Manager per	£50 £100	Sep. allowance
1458	1889	Six months leave on full pay			
1515	1890	Rockhampton	Manager	500-£100	Residence duty £3 per mo
571	1891				Tropical allowance
602	1892	as to Mr. [redacted]	Capitalist		
1011	1893	Resigned rather than accept a reduced position			(3 months Salary paid him)
1040	1894	Resigned			
1061	1895	Has joined the [redacted] army			

Note: The Name has been digitally expunged to preserve confidentiality.

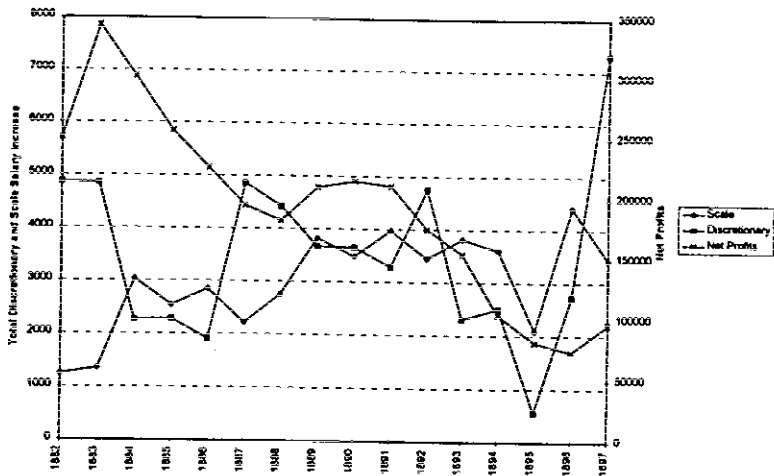
Source: U/270, Book 1.

Figure 2
Separations and the Business Cycle



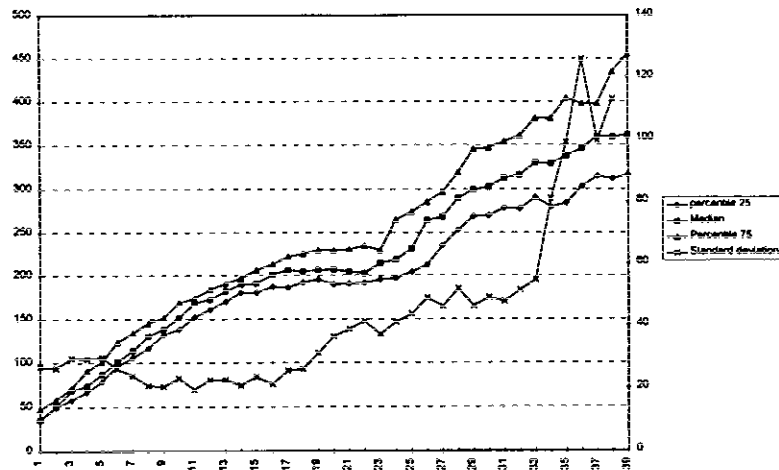
Source: U/270.

Figure 3
Salary increments Given at the Bank's Discretion and According to Scale



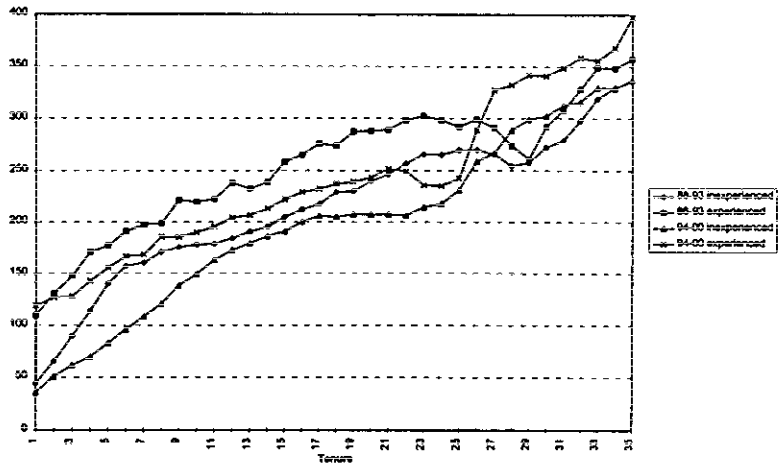
Source: U/258/1.

Figure 4
Distribution of Wages of Previously Inexperienced Workers who Remained 30 or More Years



Source: U/270.

Figure 5
Median Wages of Inexperienced and Experienced Workers by Cohort Group



Source: U/270