行政院國家科學委員會專題研究計畫　成果報告

商業衰退環境中的年度紅利獎金和就業情況

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計畫主持人：彼得摩頓

計畫參與人員：沈思慧，林璟農

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共同主持人： (無)
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一、中文摘要

當企業未來的營運狀況處於不確定的狀況時，就業關係是具有風險的。理論上可以說明當企業營運不佳時，彈性機制的工資制度可以調節就業情況。從台灣製造業到 1997 年的資料顯示,當年終獎金占當年總所得較大部分時，就業水準是較高而且較穩定的，但這是在企業營運很好，而經濟穩定成長時期的發現。觀察 1997 年後的資料，此期間包含一次經濟衰退及幾次經濟打擊，我們發現年終獎金和就業水準仍繼續呈現正相關的；就這些結果所作的敏感度分析顯示，如果沒有年終獎金機制的工資彈性，則製造業就業水準將減少 10-20%。

關鍵詞：紅利，利益分享, 就業，工資變量，衰退

English Abstract

Employment relationships are risky to the extent that future business conditions are uncertain. Theory suggests that some built-in flexibility of wages should encourage employment by allowing adjustments to be made when business is not good. Data from Taiwan manufacturing up to 1997 showed that in sub-sectors where year-end bonuses accounted for a relatively large part of total compensation, employment was higher and more stable, but these findings came from a time of steady economic growth in which business conditions had been quite good. By looking at the post-1997 data that contain one major recession and several other serious shocks, we were able to show that the positive association between bonuses and employment continued to be valid, and a sensitivity analysis based on these results suggested that manufacturing employment would have been 10-20% lower in the complete absence of bonus-based wage flexibility.

Keywords: bonus, profit-sharing, employment, wage volatility, recession

二、緣由與目的

Motivation: Considered as a whole, the "labor market" is probably the most complex and important market in any market economy. Macroeconomic disturbances may come from many different sources, but it is ultimately in the labor market that they must either be adjusted away or else amplified to bring about a prolonged downturn. Any market that fails to clear can be described as suffering from a misalignment of prices, and any widespread institutional feature that influences the pricing of labor will have consequences not just for the employers and employees who are directly involved but also for the economy as a whole.

Many compensation schemes can be designed to help workers' pay reflect firms' business conditions, and the custom of awarding annual or seasonal bonuses, as practiced in Taiwan and several other East-Asian economies (Freeman and Weitzman, 1987; Ito and Kang, 1989) is perhaps one of the most straightforward of these. During the last two decades, Western economists have given extensive study to more formal contractual arrangements known broadly as "profit-sharing," that can accomplish the same goal, that of tying workers' pay to various measures of firm performance. Whether based on revenues, stock prices, dividends, or

alternative accounting measures, strict "profit-sharing" differs from the payment of bonuses mainly by trying to contractually define what workers should receive in each possible state of the economy. (Weitzman, 1984; Ittner et. al., 1997) If there is sufficient trust or long-term community of interest between employers and employees, bonus payments might even be considered simply as one of the practical manifestations of profit-sharing theory. For empirical purposes, though, it may be difficult to determine the extent to which bonuses are really able to reflect business conditions and thereby influence firms' decisions about how many employees to hire.

This empirical problem is especially severe when the economy is growing steadily, as was Taiwan's during the sample period for an earlier study (Morton, 1998), from 1982 to 1997. On the basis of the pre-1997 data, it was evident that those manufacturing industry sub-groups in which bonuses accounted for a larger part of total employee compensation did increase their workforces more rapidly (or reduce them more slowly) than did sub-groups where bonuses were less important. One possible explanation for this observed behavior was that by channeling compensation through the annual bonus, these firms were able to reduce their contingent liability to their employees in case business conditions deteriorated. However, since conditions actually remained quite good during this period, it was not possible to observe the employment effects of the bonuses during hard economic times. The unfortunate fact that Taiwan's economy has since suffered a recession in 2001, and that the overall stability of its growth path has deteriorated markedly after 1997 gave us a chance to sharpen the earlier analysis by comparing the more difficult recent period with the smoother period previously studied.

三、 研究結果

Research Results: We drew our compensation data mainly from the Executive Yuan Directorate General of Budget, Accounting and Statistics (DGBAS) publication entitled: Monthly Bulletin of Earnings and Productivity Statistics for Taiwan Area, Republic of China. Two series are of interest here; one is an index of wage earners' earnings for different manufacturing sub-groups, hereafter abbreviated "JW". The other is a nominal measure of employees' average monthly earnings, not restricted to wage earners, and is abbreviated "AE". The JW and AE measures are highly correlated; we favored the use of JW in our analysis because it focused on those workers whose labor was a variable cost to their firms rather than a fixed component of managerial overhead.

Since the data series themselves combine bonuses together with all other elements of workers' pay, it was necessary to decompose the aggregate data into three components in order to develop a proxy measure of bonuses. After converting the monthly data to quarterly data, we first regressed each series as a pure polynomial function of time in order to define a unique secular, seasonally-insensitive growth trend for compensation in each sub-sector. With respect to this underlying growth trend, we then defined three different measures of volatility:

Total Volatility (TV) represents the standard deviation of residual compensation around the time trend. Seasonally Unpredictable Volatility (SUV), represents the standard deviation of the residuals which remain unexplained when seasonal dummy variables are added to the time regression to absorb recurrent patterns of departure from trend. The third measure, Seasonally Predictable Volatility (SPV), measures the standard deviation (divergence?) of the seasonal fitted values around the non-seasonal fitted values. It is SPV that we regard as the best proxy measure of a particular sub-sector's tendency to pay bonuses. SUV provides a further proxy measure of a sub-sector's tendency to vary compensation in response to data not captured by time and seasonality. It also contains most of the noise introduced by errors in the data collection process. Since all data were regressed as log values, the volatility measures can be treated as percentages of quarterly trend compensation. Table 1, below,

compares the different measures of compensation volatility among twenty-two manufacturing sub-sectors, for the period 1991-2003. For comparison purposes, the growth rate and total volatility of employment is also calculated for each sub-sector.

(Please seeTable 1.)

On the basis of data from 21 of these 22 sub-sectors, we observe that there is a significant positive correlation (0.451) between SPV(JW) and employment growth over the whole 12-year sample period. This result collapses, unfortunately, with the inclusion of the tobacco industry, a small outlier not included in the earlier paper's data set. This tiny, heavily regulated sub-sector paid very large and irregular bonuses to its employees while halving the size of its labor force over the sample period. When it is included in the sample, the above-cited correlation coefficient goes from being significantly positive to being insignificantly negative (-0.039). Nonetheless, the data exists and cannot be arbitrarily excluded from consideration. Two implications are clear: First, simple correlations between industry sub-groups are insufficiently robust to provide a good basis for generalization about the relationship between bonuses and employment. Second, the sample needs to be weighted so as to reflect the difference between the least important industries like tobacco, and the most important, like electronics.

In order to take full advantage of all the available information, we next assembled a set of panel data for all twenty-two manufacturing sub-sectors and all forty-eight quarters (1991.2 through 2003.1). To allow for changes in the tendency to pay bonuses during the sample, SPV and SUV data for compensation volatility was entered as twenty-quarter moving standard deviations. Along with the compensation data, a set of control variables was included to account for differences in the economic conditions faced by each sub-sector. These included measures of average hours worked, baseline compensation, inventory status, labor productivity trend, sub-sectoral wholesale price indices and value of output. A multivariate weighted-least-squares regression model was estimated to predict quarterly changes in the log of sub-sectoral employment based on the log changes and observed volatilities of sub-sectoral compensation and of the control variables. To avoid causation issues while still preserving the computational simplicity of a single-equation model, all independent variables were lagged behind the dependent variable by one quarter. The results for the estimation over three different time periods (1991.2-2003.1, 1991.2-1997.1, and 1997.2-2003.1) are presented in Table 2 below:

(Please See Table 2.)

The Table 2 results show that when entered together in the same regression model, the compensation volatilities, MJWSUV and MJWSPV appear to have opposing effects on employment. In all three sample periods, MJWSPV's effect on employment is significantly positive. Thus, this proxy measure of the tendency to pay annual bonuses appears to encourage hiring and discourage laying off. This is as clear in the post-1997 period as it was in the earlier, more prosperous years.

Paradoxically though, the coefficients attached to MJWSUV are uniformly negative, although not always significantly so. Thus, although paying large regular bonuses results in higher levels of employment, it also seems that when firms actually demonstrate the flexibility to vary their patterns of compensation, the effect on employment becomes negative.

This apparent contradiction is not fully resolved just by assuming that the sub-sectors that deviate from their predictable seasonal bonus patterns are probably those most seriously affected by the recession. The numerous control variables included in the equation are there precisely to control for the unequal impact of economic shocks on the different sub-sectors.

The control variable coefficients for lagged values of Average Hours (LAHD1) and All-Manufacturing Employment (LMEPD1) indicate a major difference in the pre-1997 and post-1997 labor market environments. In the

earlier period, with unemployment rates averaging 1.8% for the economy as a whole, the effect of LAHD1 on employment is strongly positive, indicating that firms are adjusting to changes in sub-sectoral business conditions by first adjusting work hours, and only later adjusting employment levels. The coefficient becomes insignificantly negative during the later period. Likewise, in the earlier period of strong economic growth, changes in All-Manufacturing employment are associated, one quarter following, with opposite-signed changes in sub-sectoral employment. In the post-1997 period, the dynamic is reversed. The behavior of these two coefficients strongly suggests a shift from a "tight" supply-constrained labor market in which firms find it difficult to recruit, to a "loose" demand-constrained labor market in which surplus unemployed labor is easily available on the open market. The economy's measured unemployment rate for this period averaged 3.6%. Under these circumstances, average hours worked no longer need to change drastically in response to business conditions; firms can just as easily lay off workers and hire them back. Individual sub-sectors no longer need to compete with each other for a finite supply of manufacturing labor; instead, they are more likely to follow the cyclical stance of manufacturing as a whole, contracting as manufacturing contracts, and recovering as manufacturing recovers.

The difference in the two employment regimes suggests that the employment disincentive associated with MJWSUV may be a supply-side effect. If workers are reluctant to work for firms with a history of unanticipated changes in compensation, they were surely in a better position to act on this preference in the tight pre-1997 labor market than they were subsequently. This may explain why the negative sign of the MJWSUV coefficient is less pronounced in the post-1997 environment.

Simulation and Sensitivity Analysis: Statistical significance is not necessarily equivalent to economic significance. Since the two component measures of compensation volatility have opposing effects on employment, the present study has tried to determine the overall practical effect of discretionary compensation volatility on manufacturing employment. As a baseline for comparison, we note that manufacturing employment in Taiwan stood at 2.406 million in 1991, the first year of the sample period, and had declined by about 3.6 per-cent to 2.324 million by 2003, the final year of the sample. This represents a cumulative decline of about 16% from the all-time high of 2.702 million reached in 1987, reflecting not only cyclical factors but a long-term shift of labor from manufacturing towards the service sector.

We used the estimated coefficients for predictable and unpredictable compensation volatility to correct the observed intra-sample employment figures and extrapolate the net effect of completely eliminating all volatility around the trend-line. This is not equivalent to freezing compensation at some fixed value for the entire period, but it does rule out the payment of any seasonal bonuses, or any ad-hoc adjustment of compensation in response to business conditions. The effect would not only be to exclude the positive employment effects associated with the predictable annual bonuses captured by the SPV measure, but also to exclude the negative employment effects associated with SUV.

Table 3 shows the breakdown by sub-sector, of simulation results using the 48-month coefficients from the right-hand column of Table 2.

(Please See Table 3.)

Since all the equations were estimated in log differences, the problem essentially becomes one of compounding. Examining the twelve-year regression coefficients from table 2, each one percent of seasonally predictable compensation volatility reported in MJWSPV will augment the observed log change in employment by (0.066 * 0.01), or 0.00066. Each one percent of seasonally unpredictable volatility reported in MJWSUV will reduce the observed log change in employment by (0.152 * 0.01), or 0.00152. Because the volatility measures move over time, it is necessary to

make this calculation separately for each quarter, and for each sub-sector, before adding up the total log changes over the whole sample period, and converting them back to absolute numbers to determine the net employment impact. As illustrated in the top row of each simulation table, it is not possible simply to apply the correction to the log of total manufacturing employment. Due to portfolio effects, the weighted sum of the volatilities of the sub-sectors, unless perfectly correlated, will be greater than the observed volatility of the sum of the sub-sectors. The correct effect on overall manufacturing employment is calculated in the bottom row as the sum of the effects on the individual sub-sectors. Due to the coordinated timing of the annual bonus payments, the portfolio effects tend to understate the impact of eliminating the unpredictable component to a greater extent than in the case of the predictable component. Indeed, because the sub-sectors themselves are portfolios composed of individual firms, a true freezing of compensation to its non-seasonal trend-line would have an even greater positive effect than that reported in the bottom line of the simulation.

Table 3 predicts that over the 48-quarter sample period, elimination of all off-trend compensation volatility would have reduced 2003's manufacturing employment by in excess of an additional fourteen percent. Columns A and B present the logs of actual observed employment at the period's beginning and end, followed by the observed log change in column C. Column D contains the log adjustment for employment lost in association with the elimination of the seasonally predictable bonus proxy, followed by a subtotal in column E. Column F contains the log adjustment for employment gained in association with eliminating the seasonally unpredictable compensation volatility, with the final total given in logs in column G. The entire exercise is done in log form except the rightmost column H, which summarizes the overall net effects of the simulation as percentages of actually observed 2003 employment. The percentage effects in each sub-sector reflect the different proportions of predictable to unpredictable compensation volatility being eliminated. The biggest estimated employment losses from elimination of all volatility will be found in industries where SPV exceeds SUV by the largest margin.

To highlight the effect of compensation volatility in hard times, the sensitivity analysis was repeated using the coefficients from the rightmost column of Table 2, based only on the post-1997 period. The major difference is that the negative MJWSUV coefficient is now much smaller, while that of MJWSPV is little changed, so the cost of eliminating the predictable annual bonuses is no longer mitigated by any offsetting benefit. The result is that, using the coefficients for the shorter period, we find that the six-year cumulative employment cost to the manufacturing sector of eliminating all deviation from the compensation trend-line would be even larger (17.88 per-cent) than the previously estimated twelve-year cost. These results indicate that the employment benefits from the annual bonus system and the compensation flexibility that surrounds it were disproportionately concentrated in the more difficult economic times of the latter period.

四、結果討論與自評

Discussion: The practical import of the estimated equations is surely exaggerated in the sensitivity analysis by assuming that large institutional changes in the way wages are paid could be made for extended periods without compensating changes taking place elsewhere in the system. These simulation results amount to a large out-of-sample projection based on a linear approximation. As such, it would be unwise to rely on them as support for a major policy initiative to expand the use of annual bonuses. That was not the intention of the exercise. But linear approximations are a good guide to the effects of small changes close to the original neighborhood of estimation, and we might reasonably conclude that policies designed to modestly encourage or reinforce the custom of year-end bonuses would have modestly positive effects on employment, both

in manufacturing and probably elsewhere in the economy.

Conclusions: By updating and augmenting the findings of the 1998 study, this research has been able to improve our understanding of the effect of annual bonuses in a period of unstable product demand and slack labor markets. The new findings do suggest that bonuses are not seen by employers as merely a recruiting device or a rescheduling of a fixed bill of compensation. In a slack labor-market, the recruiting motive is likely to be unimportant, and yet the beneficial employment effects of regularly-paid annual bonuses persist and are even enhanced. These results lend additional support to the hypothesis that such bonus payments significantly reduce the risks involved in hiring workers and offer an adjustment alternative to layoffs when conditions are unfavorable.

This study differs from the 1998 study by focusing purely on hiring effects, where the present analysis has been more detailed and has covered a more interesting sample period. In the process, we have disregarded several potentially interesting lines of inquiry to which we may wish to return in the future.

One disregarded line of inquiry is the possible causal connection between bonuses and productivity growth. The 1998 study had tried with little success to estimate a three-way simultaneous model of co-causation between labor productivity, annual bonuses, and profits. Although we collected additional data about profits and productivity, the quality of the data still appeared to be quite noisy, so we didn't have much hope of improving on the earlier findings.

We also tried to collect as much information as possible about employee compensation through stock bonuses, which has become an important factor in many high-tech manufacturing sectors, but is not included in the AE and JW earnings' series. This means that our data about bonuses is fundamentally incomplete, and that the largest fluctuations in employee earnings are probably not to be found in their labor incomes but in asset markets. We would encourage the R.O.C. government agencies involved the collection of economic data series to seek new ways to assemble information about asset-based earnings and stock bonuses, although we recognize the extreme difficulty of the job. It would probably be better to start new time series specifically to capture stock-derived employee income, rather than risk contaminating the existing AE and JW series with new categories of income or new methodologies.

五、參考文獻

References: The reference list that follows here is separated into two categories. The first contains sources of empirical data about the various time series on compensation, employment, profits, and control variables discussed in this report. The second list contains references that relate to the institutional, theoretical, and comparative historical context of the research.

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Table 1.

Summary Measures of Earnings Volatility and Growth, and Employment Volatility

	Empl. Volatility	Average Earnings (AE)			Wage Earners' Index (JW)			Growth		Mfg % Employed
label	EPTV	TV	SUV	SPV	TV	SUV	SPV	AEG	JWG	1996 q4
FOO	2.01	13.26	1.94	13.31	13.32	1.97	13.38	3.19	3.33	4.88
TOB	12.30	36.09	11.28	36.20	36.03	13.07	36.22	3.94	4.69	0.19
TXT	2.38	10.66	2.31	10.67	8.80	2.25	8.80	2.34	2.02	6.46
APP	1.77	9.85	1.75	9.91	7.54	2.43	7.59	3.27	2.61	4.32
LEA	3.50	10.66	2.71	10.81	8.83	3.05	9.05	4.42	4.07	1.48
WOO	3.30	11.06	2.09	11.09	9.36	2.95	9.38	3.54	2.73	1.27
FRN	2.88	12.11	1.90	12.17	9.95	2.37	10.00	2.10	1.26	2.04
PLP	1.91	14.28	2.80	14.32	13.28	3.00	13.31	2.25	2.26	2.62
PRN	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.27
ICH	2.81	18.10	4.32	18.30	18.33	4.79	18.52	3.32	3.04	2.73
CHP	2.89	16.73	2.54	16.74	14.26	2.15	14.26	3.30	3.53	2.60
PTR	2.82	18.68	7.09	18.68	18.99	8.15	19.02	3.21	2.42	0.71
RUB	2.00	11.68	2.57	11.74	9.69	2.60	9.72	3.02	2.44	1.79
PLA	2.02	14.81	2.17	14.87	13.74	2.43	13.82	4.02	3.66	7.49
NMM	2.95	12.67	2.01	12.70	11.53	2.20	11.57	2.95	2.70	3.94
PMT	2.21	10.03	3.84	10.16	9.06	3.86	9.17	2.67	2.33	4.58
FMT	2.01	11.00	1.96	11.09	9.39	2.05	9.45	2.94	2.47	10.81
MAC	1.99	14.06	1.77	14.13	12.74	1.89	12.81	3.11	3.01	7.00
ELE	2.35	13.38	1.70	13.41	12.06	2.15	12.09	4.40	4.20	22.11
TRN	2.07	15.46	3.54	15.49	14.18	3.29	14.21	2.34	1.92	5.97
PRE	3.45	12.92	2.63	12.94	11.00	2.14	11.02	4.46	3.71	1.39
OTH	2.26	13.30	2.00	13.38	11.72	2.01	11.80	3.85	3.32	3.34
MFG (all)	1.93	13.13	1.25	13.18	11.77	1.33	11.82	3.83	3.47	100%

Source: Author's calculations using data from: Monthly Bulletin of Earnings and Productivity Statistics, Directorate General of Budget, Accounting and Statistics, Republic of China.

Table 2.

Dependent Variable: Current Quarter (t-1 to t) Change in Log of Sectoral Employment (EPD)
WLS Weights: Percentage of Total Mfg. Labor Force
Period: 1991:2 to 2003.1

Previous Quarter (t-2 to t-1) Changes and Volatilities for Economic Independent Variables:

(LEPD1) A lagged value of EPD.
(LAHD1) A Sectoral index of average hours worked.
(LJWSD1) Smoothed Sectoral Nominal Wage Trend.
(LISQRD1) Sectoral Inventories, (Relative to Smoothed Output Trendline.)
(LMEPD1) All-Manufacturing Employment Level.
(LSLPD1) Smoothed Sectoral Labor Productivity Trendline.
(LWPXD1) Sector-specific Wholesale Price Index.
(LPVXD1) Index of Sectoral Production Value. (Nominal)
(MJWSUV) Seasonally Unpredictable Sectoral Wage Index Volatility.
(MJWSPV) Seasonally Predictable Sectoral Wage Index Volatility.

Variables beginning with "L" and Ending in "D1" are log differences from t-2 to t-1. Variables beginning in "M" and ending in "V" are 20-quarter moving standard deviations with respect to a previously estimated trendline. (*) designates P(t) < 0.1, (**) designates P(t) < 0.05, and (***) designates P(t) < 0.01.

	Whole Sample			**Good Times**			**Hard Times**		
From, to	1992 q2	1997 q1		1992 q2	1997 q1		1997 q2	2003 q1	
F, P(F)	18.7	.000		19.3	.000		13.5	.000	
R^2, adj R^2	.248	.235		.403	.382		.320	.296	
N, D.W.	986	1.855		503	1.729		503	1.844	
	coef	**(t)**		**coef**	**(t)**		**coef**	**(t)**	
Constant	0.148	(0.162)		-3.554	(-2.082)	**	-0.927	(-0.818)	
LEPD1	0.115	(2.974)	***	0.046	(0.909)		0.222	(4.261)	***
LAHD1	0.094	(6.821)	***	0.204	(9.861)	***	-0.021	(-1.378)	
LJWSD1	0.170	(1.144)		-0.133	(-0.528)		0.091	(0.490)	
LISQRD1	-0.013	(-3.171)	***	-0.013	(-2.165)	**	-0.005	(-0.998)	
LMEPD1	-0.192	(-3.162)	***	-0.410	(-5.303)	***	0.471	(5.261)	***
LSLPD1	-0.009	(-0.153)		0.271	(2.106)	**	-0.045	(-0.749)	
LWPXD1	-0.055	(-2.055)	**	-0.037	(-0.853)		-0.109	(-3.764)	***
LPVXD1	0.029	(3.611)	***	-0.003	(-0.248)		0.031	(3.549)	***
MJWSUV	-0.152	(-2.247)	**	-0.158	(-1.424)		-0.041	(-0.537)	
MJWSPV	0.066	(2.471)	**	0.083	(1.839)	*	0.069	(2.112)	**
MEPV	-0.195	(-2.757)	***	-0.552	(-4.611)	***	0.028	(0.307)	
MAHV	-0.049	(-0.299)		0.931	(2.736)	***	0.092	(0.435)	
(MJWV)	(Two Components)			(Two Components)			(Two Components)		
MISQRV	-0.009	(-1.000)		0.003	(0.172)		-0.012	(-1.181)	
MMEPV	0.282	(1.387)		0.537	(1.339)		0.429	(1.126)	
MJLPV	-0.081	(-2.134)	**	0.059	(1.022)		-0.116	(-1.912)	*
MWPV	0.112	(1.666)	*	0.201	(1.941)	*	0.041	(0.514)	
MPVV	-0.063	(-2.272)	**	-0.137	(-3.211)	***	-0.054	(-1.503)	

Source: Author's calculations using data from Monthly Bulletin of Earnings and Productivity Statistics, Directorate General of Budget, Accounting and Statistics, Republic of China

Table 3.

Simulation: If compensation had been locked into its non-seasonally estimated trend-line by eliminating both SPV and SUV, what effect would it have had on manufacturing employment levels? This simulation uses the coefficients from table 6, (1991.2 to 2003.1) to estimate the compounded effect on employment over these 48 quarters.

	SUV Coefficient = -0.152				SPV Coefficient = 0.066			
	actual LEP92.1	actual LEP03.1	observed Change (actual)	if no spv (loss)	if no spv (subtotal)	if no suv (gain)	if no suv and no spv (end value)	net gain or loss (percent)
	A	B	C	D	E	F	G	H
ALL (direct)	14.664	14.636	-0.027	-0.364	14.272	0.082	14.354	-28.24
FOO	11.726	11.589	-0.138	-0.404	11.184	0.159	11.343	-24.52
TOB	8.458	8.152	-0.305	-1.031	7.121	0.961	8.082	-7.00
TXT	12.042	11.791	-0.251	-0.272	11.519	0.176	11.695	-9.55
APP	11.847	11.269	-0.578	-0.298	10.972	0.072	11.044	-22.58
LEA	10.846	10.311	-0.535	-0.341	9.970	0.153	10.123	-18.76
WOO	10.835	10.118	-0.716	-0.391	9.727	0.115	9.842	-27.63
FRN	10.981	10.663	-0.318	-0.291	10.373	0.181	10.554	-10.99
PLP	11.035	11.116	0.081	-0.376	10.740	0.245	10.985	-13.06
ICH	11.055	11.179	0.124	-0.570	10.609	0.349	10.958	-22.08
CHP	10.969	11.127	0.159	-0.421	10.706	0.200	10.906	-22.13
PTR	9.768	9.604	-0.163	-0.623	8.981	0.651	9.633	2.81
RUB	10.817	10.584	-0.233	-0.301	10.283	0.186	10.469	-11.52
PLA	12.225	12.083	-0.142	-0.424	11.659	0.131	11.790	-29.30
NMM	11.536	11.251	-0.286	-0.313	10.937	0.205	11.143	-10.81
PMT	11.487	11.548	0.061	-0.181	11.367	0.299	11.666	11.79
FMT	12.310	12.498	0.188	-0.234	12.263	0.203	12.467	-3.08
MAC	11.897	12.036	0.139	-0.314	11.722	0.207	11.929	-10.74
ELE	13.050	13.265	0.215	-0.356	12.909	0.172	13.081	-18.46
TRN	11.830	11.718	-0.112	-0.398	11.320	0.263	11.584	-13.45
PRE	10.550	10.341	-0.209	-0.414	9.927	0.148	10.075	-26.65
OTH	11.639	11.123	-0.516	-0.392	10.731	0.117	10.848	-27.51
ALL (portfolio)	14.664	14.636	-0.027	-0.341	14.296	0.196	14.492	-14.41

行政院國家科學委員會補助專題研究計畫成果報告

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※　商業衰退環境中的年度紅利獎金和就業情況　※
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