

## Does Job-Satisfaction Cause Life-Satisfaction? New Evidence Using Lewbel Methodology

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While studies on the direction of causality between job satisfaction and life satisfaction are abundant, their evidence is still inconclusive primarily because of the difficulty in finding suitable external instruments. We have constructed internal instruments, using the Lewbel methodology, which satisfy the desirable properties. It is important to determine the direction of causality since the implications for public and labour policies are different depending on the direction. The second contribution of this study is to examine the link between life satisfaction and the twelve aspects of job satisfaction in order to explore whether extrinsic (pay, benefits, and other work conditions) or intrinsic (kind of work) job satisfaction matters. For this purpose, a survey was conducted in Wah Cantt, Pakistan using a sample of 300 respondents. The study findings reveal that there is a bidirectional causality between life and job satisfaction. However, the effect of job satisfaction on life satisfaction is stronger than the effect of life satisfaction on job satisfaction. Mixed results related to causality between twelve aspects of job satisfaction and life satisfaction were found. The paper ends with important policy implications.

*Keywords:* Life Satisfaction; Job Satisfaction; Aspects of Job Satisfaction; Causality

### I. INTRODUCTION

*“Economic things matter only in so far as they make people happier”* Oswald (1997).

For a long time, studies related to happiness or life satisfaction were largely considered a field of psychology and sociology. Generally, happiness and life satisfaction are used as synonyms and both are the most common indicators of subjective well-being (Dolan, Peasgood, and White, 2008). Literature shows that life satisfaction and happiness are highly correlated indicators of subjective well-being (Di Tella, Macculloch, and Oswald, 2003). According to Erdogan, Bauer, Truxillo, and Mansfield (2012), life satisfaction is *“an individual’s cognitive assessment of satisfaction with his life circumstances”*. Economists started to take a serious interest in this topic after a study by Easterlin (1974). In this study he suggested that the main objective of policymakers

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should be the maximisation of life satisfaction (happiness) of people rather than maximisation of economic growth. The results of his study show that in the past half century, real income in most developed countries increased many times, but the reported life satisfaction (happiness) level remained the same. This is known as the “Easterlin Paradox”.

Easterlin’s study introduced the concept of life satisfaction for economists to think about. Over the last decade more than 1500 papers were published in this area (Mishra, Nielsen, Smyth, and Newman, 2014). According to Kaneko (2013), economists are concerned with factors that influence life satisfaction (LS) / happiness. Many economists attempted to explore the determinants of life satisfaction (happiness) and concluded that income, labour market status, job characteristics, health, education, family, social relationships, security, moral values, and religious faith are some of the important determinants of life satisfaction.

Literature reveals that employment is one of the important factors contributing to life satisfaction (Clark and Oswald, 1994; Frey and Stutzer, 2002a; Frey and Stutzer, 2002b). Layard and Layard (2011) says that work is the third most significant factor among seven factors that can influence happiness.<sup>1</sup> As a job is a very important part of an individual’s life, it is not possible to separate job satisfaction from life satisfaction. Therefore, in recent years, the link between life satisfaction (LS) and job satisfaction (JS) has received increased attention from researchers. Job satisfaction is defined as “the positive emotional state resulting from the appraisal of one’s job or job experiences” (Locke, 1976; cited by Aziri, 2011; and Mishra, et al. 2014). Existing studies found that there is a significant and positive association between life and job satisfaction. According to Filiz (2014), a person’s job satisfaction relates to life satisfaction because people spend a large proportion of their life at their workplace.

There are three conflicting theories that predict a relationship between these two domains of satisfaction: spillover, compensation, and segmentation theories:

- The “spillover” theory defines how experiences in one domain of life (e.g. work) influence experiences in another domain or overall life. A number of studies have supported the “spillover” theory as that suggests a positive association between life satisfaction and job satisfaction (Parlow, 2010).
- The “compensation” theory describes a mechanism in which activities or experiences in one domain of life (e.g. family) compensate for poor experiences in another domain (e.g. work), while the person tries to balance their effects across the domains.
- The “segmentation” theory refers to a mechanism by which individuals try to separate life domains in order to avoid experiences being transmitted between life domain (e.g. work) and overall life (Dolan and Gosselin, 2000; Drobnič, Beham, and Präg, 2010).

Likewise, Diner (1984) suggests two more theories that are used to understand the casual nature of the relationship between life satisfaction and job satisfaction: the “bottom-up” and the “top-down” approach. The “bottom-up” approach is a situational explanation: a high level of job satisfaction leads to a high level of life satisfaction. The

<sup>1</sup>Krause, A. (2014). Happiness and Work. *Discussion Paper*.

“top-down” approach is a dispositional explanation: life satisfaction has a causal effect on job satisfaction.<sup>2</sup>

Much research examines the with inconclusive results. Studies found a two-way causation between life and job satisfaction (Alghamdi, 2015; Headey and Muffels, 2014; Rode and Near, 2005; Schmitt and Bedeian, 1982). Some studies indicate that job satisfaction caused life satisfaction, but life satisfaction did not cause job satisfaction [Chacko (1983); Orpen (1978)], while other studies posit that life satisfaction has a causal effect on job satisfaction (Judge and Watanabe, 1993; Headey, Veenhoven, and Wearing, 1991).

Some literature documents that different job characteristics have a significant effect on a person’s job satisfaction as well as on their life satisfaction. Wages and other important job characteristics, such as occupation, hours of work, job security, and commuting time to work, affect job satisfaction. Among the many factors affecting job satisfaction, job security seems to be the most important (Oswald, 2002). The literature also documents that overall job satisfaction and subjective job characteristics, such as work environment, independence, social usefulness, stress, relationships within workplace, pride, contingent rewards and nature of work have a significant association with the overall life satisfaction of workers (Ahn, 2007; Bowling, Eschleman, and Wang 2010; Drobnič, et al. 2010; Landry, 2000).

Since we know that people spend a significant amount of time at the workplace, we can expect that satisfaction with their job will affect their overall life a great deal. Although there are a number of studies that have analysed the link between life and job satisfaction, there is no study on the direction of causality between job satisfaction, job characteristics and overall life satisfaction for Pakistan in particular. We have found very few studies in Pakistan on this issue: Naz (2015) investigates the relationship between life satisfaction and job satisfaction through correlation analysis. While exploring the relationship between women’s autonomy and happiness in Pakistan, Ali and Haq (2006) finds a correlation between female labour force participation and happiness. Hasan (2016) finds a positive impact of income increment on happiness or life satisfaction in Pakistan, using Pakistan Socio-Economic Survey data 2001. Since a job is the main source of income for a majority of the people in Pakistan, this study questions whether people are satisfied with their jobs and lives together.

In our study, we not only examine the relationship between life satisfaction and job satisfaction but also investigate the association between different aspects of job satisfaction and life satisfaction. The research on the relationship between life satisfaction and the different aspects of job satisfaction is theoretically and practically applicable (Mishra, et al. 2014). Theoretically, it provides a better understanding of the fundamental relationship between life satisfaction and aspects of job satisfaction, while practically it helps employers in prioritising and designing intervention and counselling programs (Bruck, Allen, and Spector, 2002).

The direction of causality between job satisfaction and life satisfaction of workers with different socio-demographic variables is also examined, which is significant for both employees and employers. This study would be beneficial for employees to quantify the

<sup>2</sup>Alghamdi, F. S. (2015). Another Look at Job and Life Satisfaction among Employees: Evidence from a Developing Country.

job preferences affecting their performance and productivity. It is helpful for an employer to understand the requirements and preferences of employees so they can better facilitate them for proper utilisation of their skills to achieve efficiency. Measuring life satisfaction of the people is not only important for welfare analysis but also useful for formulating economic policy.

The paper proceeds as follows:

- Section II discusses data and methodology.
- Section III performs descriptive statistical analysis.
- Section IV estimates the model and delineates estimation results.
- Section V summarises the results and concludes the paper with policy implications and recommendations.

## II. DATA AND METHODOLOGY

### Data and Sample

Primary data is used for this study. A survey was conducted in August 2015 among employees working in various white and blue collar jobs in both public and private sectors in the vicinity of Wah Cantt.

Wah Cantt is a city in the Punjab, a province of Pakistan. It is a cantonment, which means the military administrates Wah Cantt, located in the northwest of Islamabad. It comprises of a population of 0.35 million in a 35 square mile area and is considered an advanced and developed city. Wah Cantt is unique in that all services and facilities, including education, transportation, medication, playgrounds, parks, and markets are provided by the POF (Pakistan Ordinance Factory) to all its employees as well as to all other residents.

In econometric modelling, identifying confounding factors is extremely important. One of the very important confounding factors is quality of life or standard of living in the relationship between job-life satisfactions. However, quality of life is a highly complex, multidimensional, and interdisciplinary concept. There are two ways to control the effect of this confounding factor; one is to collect all indicators of quality of life and include them in the model, and the other is to select a region where the quality of life is same. The first solution is not practical because a small sample size does not allow many variables in the model, and more importantly, our main concern is not the quality of life but the causal link between job and life satisfaction. Therefore, we have resorted to the second solution to control this factor; we chose a city that has more or less the same quality of life so that it does not affect the relationship between life satisfaction and job satisfaction.

The respondent group includes workers that are full-time employees between the ages of 18-65 years (self-employed persons are excluded). The method of selecting a unit of analysis is known as a sampling technique. Two main sampling techniques, probability and non-probability, are available in the literature. Under non-probability sampling, convenience, purposive and quota sampling techniques are used. The purposive sampling technique was employed to select the unit of analysis. Purposive sampling is a non-probability sampling technique in which the researcher uses his judgment when choosing members of the population to participate in the study. It saves time and money (Black, 2010 and Etikan, et al. 2016).

Questionnaires were distributed among 330 employees who met the abovementioned criteria. Out of the 330 questionnaires, 300 were filled and returned, and were used for further analysis. The response rate was 90.09 percent.

### Variables Construction

**Measurements of Life Satisfaction:** Life satisfaction is measured through the personal well-being index (PWI) used by Cummins (2013). The personal well-being index (PWI) is measured by the seven life domains that are personal health, living standard, personal relations, life achievements, personal safety, future security, and community connectedness. Each domain is rated from a scale 1 to 7 where 1 is 'completely dissatisfied' and 7 for 'completely satisfied'. After getting data on these seven domains we take an average across all domains for each respondent and then convert these results into the standard format of 0 – 100 by using the following formula:

$$\frac{X - K^{min}}{K^{max} - K^{min}} \times 100$$

Where

X is the average of all seven domains that are to be converted.

$K^{min}$  stands for minimum score on the scale that is 1.

$K^{max}$  represents the maximum score on the scale that is 7.

**Measurement of Job Satisfaction:** Job satisfaction is measured by twelve aspects that are pay, supervision, promotion, contingent rewards, fringe benefits, co-workers, operating procedures, communication, nature of work, job autonomy, training, career development opportunities, and work environment. Each aspect consists of four questions. Thus, job satisfaction is measured by the responses to forty-eight questions. Out of forty-eight questions, thirty-six questions were derived from Spector (1985) to measure the first nine aspects that are listed above. The literature shows that job autonomy, training and career development opportunities, and work environment are also important aspects of job satisfaction and therefore, we use these additional three aspects in our study. The response to each question is rated from 1 to 7 Likert scale where 1 stands for 'strongly disagree' and 7 indicates 'strongly agree'. First, the average of responses to four questions for each component is obtained and then job satisfaction is measured by taking a grand average of all aspects. Finally, job satisfaction is converted into the standard format of 0 – 100 by using the above formula. The results of the test show a scale reliability coefficient of 0.8929 that indicates a high internal consistency of our scale.

**Control Variables:** The literature on this issue reveals that life satisfaction and job satisfaction are also affected by other variables such as personal income, household income,<sup>3</sup> education, age, job experience, gender, marital status, spouse's labour market status, number of dependents, household size, and the nature and sector of the job. These variables act as control variables in our study and data is also collected on these variables.

<sup>3</sup>The rationale for including both salary and household income is given below: In the context of culture in Pakistan, we largely have a combined family system. When looking at the effect of salary on job-satisfaction or life satisfaction, it is necessary to control for the effect of household income since economic *a priori* criteria should always be preferred to statistical criteria (see Koutsoyiannis, 1977, p. 25). Moreover, the simple and partial correlation coefficients between salary and household income are not high.

### Model

To examine causal relationship between life satisfactions and job satisfaction satisfactions, we use the following two equations:

$$LS = X'\beta_1 + JS\gamma_1 + Z'\delta_1 + \varepsilon_1 \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (1)$$

$$JS = X'\beta_2 + LS\gamma_2 + Z'\delta_2 + \varepsilon_2 \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (2)$$

Where LS is life satisfaction and JS is job satisfaction,  $X'$  is the set of socio-demographic variables such as age, gender, marital status, education, income, job experience, spouse's labour market status, number of dependents, size of family, type of job and sector of job,  $\varepsilon_1$ ,  $\varepsilon_2$  are errors terms and  $Z'$  is a vector of instrumental variables.

Similar to the examination of causal relation between different aspects of job satisfaction with life satisfaction and job satisfaction by using following equations:

$$LS = X'\beta_1 + AJS'\gamma_1 + Z'\delta_1 + \varepsilon_1 \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (3)$$

$$CJS' = X'\beta_2 + LS\gamma_2 + Z'\delta_2 + \varepsilon_2 \quad \dots \quad \dots \quad \dots \quad \dots \quad \dots \quad (4)$$

Here LS is life satisfaction and  $AJS'$  is a vector of twelve aspects of job satisfaction including pay, supervision, promotion, contingent rewards, fringe benefits, co-workers, operating procedures, communication, nature of work, job autonomy, training and career development opportunities and work environment.

### Methodology

The main objective of the study is to examine the direction of causation between job satisfaction and life satisfaction and explore the relationship between various aspects of job satisfaction and life satisfaction. Mishra et al. (2014), instrumental variable (IV) regression technique is used to check causality between the variables of interest. However, suitable instrumental variables in observed data are not available since it is hard to find some conceivable variable that affects job satisfaction but not life satisfaction and vice versa. It is possible that the estimated link between life and job satisfaction is sensitive to the selection of particular instrumental variables. Due to unavailability of external (observed) instrumental variables, Lewbel (2012) suggests internal instrumental variables created using the heteroskedasticity present in the data. The advantage of the Lewbel estimation technique is that it uses heteroskedastic covariance restriction to create internal instrumental variables (IV). In our model, we use  $[Z - E(Z)]\varepsilon_2$  as an instrument, by assuming that:

$$E(X\varepsilon_1) = 0, \quad E(X\varepsilon_2) = 0, \quad cov(Z, \varepsilon_1, \varepsilon_2) \neq 0$$

Due to the problem of heteroskedasticity in  $\varepsilon_j$  we take a vector of  $Z$  as a subset of  $X$  containing age, education, monthly salary, household income, experience and household size. Using the above set of instruments, we employ two-stage least squares (TSLS) to estimate the IV regression. We use same set of instruments for all models.

### III. DESCRIPTIVE ANALYSIS

#### Demographic Characteristics

All variables are described in Table 1. The socio-demographic characteristics of all the respondents are presented in Table 2. It shows frequency and percentage distribution of respondents with respect to all socio-demographic variables.

Table 1

#### *Variable Description*

S. No.	Variables	Description
1	Age	Age in years
2	Gender	Dummy variable; 1 if male and 0 otherwise
3	Marital status	Dummy variable; 1 if unmarried and 0 otherwise
4	Education	Level of education; primary =1, middle=2, matric=3, intermediate = 4, graduation= 5, post graduate =6, M.Phil. /Ph.D. = 7, others =8.
5	Size of household	Number of family members
6	No of dependent	No. of member below 15 year and above 65 years age
7	Spouse labour market status (SLMS)	Dummy variable ; 1 if working and 0 otherwise
8	Sector of job	Dummy variable; 1 if public sector and 0 if private sector
9	Type of job	Dummy variable; 1 if permanent and 0 if contractual
10	Experience	Categories; 1 if 5 years and below, 2 if 6 to 15 years , 3 if 16 to 25 years, and 4=if above 25 years
11	Salary (monthly)	Salary range; 1= less than 10,000, 2=10,001 to 20,000, 3= 20,001 to 30,000, 4= 30,001 to 40,000, 5= 40,001 to 50,000, and 6= 50,001 and above.
12	Other source of income	Dummy variable; 1 if yes and 0 otherwise
13	Total household income	Range of household income; 1= less than 10,000, 2=10,001 to 20,000, 3= 20,001 to 30,000, 4= 30,001 to 40,000, 5= 40,001 to 50,000, and 6= 50,001 and above.
14	SW	Satisfaction with pay
15	SP	Satisfaction with promotion
16	SS	Satisfaction with supervision
17	SFB	Satisfaction with fringe benefits
18	SCR	Satisfaction with contingent rewards,
19	SOP	Satisfaction with operating procedures
20	SCW	Satisfaction with co-workers
21	SNW	Satisfaction with nature of work
22	SC	Satisfaction with communication
23	STD	Satisfaction with training and career development opportunities
24	SJA	Satisfaction with job autonomy
25	SWE	Satisfaction with working environment
26	Job satisfaction (JS)	Calculated by taking average of 12 job satisfaction variables and converted these results into 0 to 100 scale.
27	Personal wellbeing index (PWI)	Calculated by taking average of 7 domains of life for each respondent and converted these results into 0 to 100 scale.

The analysis of data shows that the average age of respondents is 37.29 years. Table 2 shows that 37.33 percent respondents are aged below 30 years and only 15.33 percent respondents are aged between 51 to 60 years old. The table also reveals that 80 percent and 71 percent respondents are male and married respectively whereas 72.44 percent (163) spouses of married respondents are not in the labour force. The majority of respondents (58.3 percent) have higher education (Bachelor's and above) in our sample. About 88.67 percent respondents are working in the public sector and 89 percent respondents have a permanent job. The remaining 11 percent have contract-based jobs. Respondents who have 6 to 15 years job experience represented the majority of the sample at 32.33 percent.

Table 2

*Percentage Distribution of Respondents by Demographic Characteristics*

Control Variables	Categories	Frequency	Percentage
Age	30 and below	112	37.33
	31-40	77	25.67
	41-50	65	21.67
	51-60	46	15.33
Gender	Male	241	80
	Female	59	20
Marital Status	Unmarried	87	29
	Married	213	71
Education	Primary	1	0.33
	Middle	8	2.67
	Metric	48	16.00
	Intermediate	38	12.67
	Graduate	102	34.00
	post graduate	57	19.00
Household size	M.Phil. , Ph.D.	16	5.33
	Other	30	10.00
	3 and below	25	8.33
SLMS	4 - 7	235	78.33
	8 and above	40	13.33
	not Working	163	72.44
Sector of Job	Working	62	27.56
	public Sector	266	88.67
Type of Job	private Sector	34	11.33
	Permanent	267	89.00
Experience	Contractual	33	11.00
	5 and below	84	28.00
	6-15	97	32.33
	16-25	68	22.67
Salary (monthly)	above 25	51	17.00
	below 10,000	6	2.00
	10,001 – 20,000	83	27.67
	20,001 – 30,000	73	24.33
	30,001 – 40,000	62	20.67
	40,001 – 50,000	54	18.00
Other source of Income	50,001 and above	22	7.33
	No	152	50.67
Total household income	Yes	148	49.33
	10,001 – 20,000	32	10.67
	20,001 – 30,000	56	18.67
	30,001 – 40,000	57	19.00
	40,001 – 50,000	73	24.33
	50,001 and above	82	27.33

Among all respondents, only 2 percent earn below PKR10,000 monthly, while the majority of respondents (52 percent) earn PKR10,001–30,000 monthly. In addition, 49.33 percent respondents have another source of income. The majority of respondents (51.11 percent) have a monthly of income of PKR40,000 and above.

#### IV. EMPIRICAL RESULTS AND INTERPRETATION

Here we discuss the IV estimates obtained by using TSLS. Table 3 contains the TSLS estimates with coefficients, standard errors, and P-values. In this table, we are reporting the results of the models in which job satisfaction and life satisfaction appeared as dependent variables alternatively.

Table 3

*TSLS Estimates (JS and LS as Dependent Variables Respectively)*

Variables	JS as Dependent Variable	LS as Dependent Variable
LS	0.28039*** (0.0898)	
JS		1.960977*** (0.4172)
Gender		
<b>Female</b>	-1.8948 (11.4315)	10.1111 (22.99115)
Marital Status		
<b>Married</b>	-5.38925 (11.18498)	19.43827 (25.0005)
Age		-16.8513** (7.1778)
Age <sup>2</sup>		0.22997*** (0.0875)
Experience	-1.50482** (0.6361)	
Education	-5.215429* 2.6708	10.58873* (6.0475)
Household Size	-6.70234** (3.2309)	-18.96052*** (5.2044)
Sector of Job		
<b>Private Sector</b>	25.67784* (13.348)	-31.9992 (29.4272)
Type of Job		
<b>Contractual</b>	-23.77844* (13.4362)	30.7314 (27.0956)
Salary (Monthly)	14.75618*** (4.7288)	23.7334* (12.229)
Household Income	-0.55924 (5.3823)	18.68135** (9.02556)
Constant	184.05*** (31.8839)	40.33199 (178948)

Standard Errors in parentheses.

\* / \*\* / \*\*\* indicate level of significance at the 10 percent / 5 percent / 1 percent respectively.

The results show that both job satisfaction and life satisfaction are significant and positive predictors of each other. The magnitude of the coefficient of job and life satisfaction reveals that they have a different effect on each other. When we take job satisfaction as a dependent variable the coefficient of life satisfaction shows that one percentage point increase in life satisfaction causes 0.28 percent increase in job satisfaction. When life satisfaction is taken as the dependent variable the value of the coefficient of job satisfaction indicates that one percentage point increase in job satisfaction leads to 1.96 percent increase in life satisfaction. So we can conclude that the value of coefficients indicates that job satisfaction has a stronger effect on life satisfaction than life satisfaction on job satisfaction as concluded by Alghamdi (2015). These results are also consistent with the “spillover” theory and the “bottom-up” approach.

The effects of other socio-demographic and socio-economic variables on job and life satisfaction are also presented in the Table 3. Gender, when female, has a negative effect on job satisfaction consistent with the findings in Ali and Haq (2006) but it has a positive impact on life satisfaction. However, these results are statistically insignificant. Being a female, the negative effect on job satisfaction is understandable since the majority of working women are in low-paid jobs involuntarily due to financial need. They also have to bear the additional burden of housework while working in a job situation.

The results show that age and age-squared are statistically significant. The coefficient of age and age-squared shows that age is negatively, and age-squared is positively, associated with life satisfaction. That means age has a nonlinear U-shaped relationship with life satisfaction as concluded by many studies (Mishra, et al. 2014; Kaneko, 2013; Degutis and Urbonavicius, 2013). On the other hand, work experience is significantly and negatively associated with job satisfaction.

In addition, education is an important factor that affects both job and life satisfaction. The results reveal that the coefficient of education is significantly associated with both life and job satisfaction. The results of the model where job satisfaction is taken as a dependent variable show that more educated people are less satisfied with a job (a negative association between education and job satisfaction). This result is consistent with Mishra, et al. (2014) and Mottaz (1984). The reason behind this negative association between education and job satisfaction may be higher work values or higher job expectations by highly educated employees. The model where life satisfaction is a dependent variable, the coefficient of education shows that with the increase in education, life satisfaction also increases (a positive effect on life satisfaction). These results are in line with Castriota (2006), Mishra et al. (2014), Lu (2010) and Degutis and Urbonavicius (2013). The reason may be higher expected wage and employment probability, better awareness of life and better health (Castriota, 2006).

The coefficient of household size indicates that household size has a negative and significant relationship with job satisfaction and life satisfaction as concluded by Kaneko (2013). Other variables like the sector and nature of job have no significant effect on life satisfaction. However, both variables have a significant effect on job satisfaction. The coefficient of a sector of the job shows that people who work in the private sector are more satisfied with their job than those who work in public sector. Similarly, the coefficient of nature of job indicates that permanent employees are more satisfied with their job than contractual employees are.

Income is also an important variable that affects both job satisfaction and life satisfaction. In this study, the two variables used are monthly salary and total household income. The results indicate that total household income has an insignificant effect on job satisfaction but has a positive and significant effect on life satisfaction, whereas monthly salary is positively related to life satisfaction but has an insignificant effect on job satisfaction. These results confirm that income has a positive and significant relationship with life satisfaction and job satisfaction. These results support the findings of Iverson and Maguire (2000), Headey and Muffels (2014) and Mishra et al. (2014).

Table 4 and 5 show TSLS estimates for the association between life satisfaction and twelve aspects of job satisfaction. We use a set of control variables as in Table 2 but in Table 4 and 5, we only present the key variables of interest in our study. These tables present the results of the model in which we disaggregated job satisfaction into its twelve aspects and each of these twelve aspects of job satisfaction is taken as a dependent variable in Table 4, with life satisfaction as a dependent variable in Table 5.

In Table 4, the coefficient of life satisfaction explains that life satisfaction has a positive and significant effect on satisfaction with pay, supervision, fringe benefits, contingent rewards, job autonomy, training and career development opportunities and work environment. These results are consistent with the findings in Mishra et al. (2014), Bowling et al. (2010), Katak, Futrell, and Sager (1992) and Mehta (1978). Satisfaction with the nature of work is the only aspect of job satisfaction that is significant at 10 percent, and is negatively associated with life satisfaction. Life satisfaction has an insignificant effect on the four aspects of job satisfaction: satisfaction with promotion, co-workers, operating procedures, and communication.

Overall results, reported in Table 4, show that life satisfaction has a significant effect on all components of job satisfaction, except satisfaction with co-workers, promotion, communication and operating procedures. These results indicate that causality runs from life satisfaction to eight aspects of job satisfaction (pay, supervision, contingent rewards, fringe benefits, nature of work, job autonomy, training and career development opportunities and work environment).

In Table 5 we report Lewbel IV estimates using TSLS in which we use life satisfaction as the dependent variable and twelve aspects of job satisfaction as independent variables separately with the set of all control variables. In Table 5, we only present the results of the main variables.

The results in Table 5 confirm that satisfaction with pay significantly and positively affect the life satisfaction. These results are consistent with Mehta (1978).

Similarly the results also indicate a significantly positive relationship between satisfaction with promotion, supervision, fringe benefits, contingent rewards, operating procedures, training and career development opportunities, work environment and overall satisfaction with life as concluded by Katak, et al. (1992), Bowling et al. (2010), Mafini and Dlodlo (2014), Mishra, et al. (2014), and Landry (2000). The results indicate a positive and significant relationship between satisfaction with job autonomy and life satisfaction consistent with the findings in Coad and Binder (2014) and Suppa (2012).

However, results indicate that satisfaction with co-workers, communication, and nature of work have an insignificant effect on life satisfaction. These results are consistent with the findings in Mehta (1978) that suggest nature of work has no

contribution in the life satisfaction of an employee whereas Mishra, et al. (2014) and Bowling, et al. (2010) indicate satisfaction with co-workers and with communication does not influence life satisfaction of an employee.

Table 4

*TSLS Estimates (Component of Job Satisfaction as Dependent Variables).*

Variables	SW	SP	SS	SFB	SCR	SOP	SCW	SNW	SC	STD	SJA	SWE
LS	.0031** (.0013)	.0001 (.0014)	.0051*** (.0013)	.0084*** (.0014)	.0044** (.0017)	.0016 (.0016)	-.0007 (.0011)	-.0019* (.0012)	-.0013 (.0014)	.0053*** (.0017)	.0042** (.0017)	.0047*** (.0016)

Standard Errors in parentheses.

\* / \*\* / \*\*\* indicate level of significance at the 10 percent / 5 percent / 1 percent respectively.

Table 5

*TSLS Estimates (Life Satisfaction as Dependent Variables)*

Variables	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS	LS
SW	50.279*** (18.201)											
SP		77.691*** (20.536)										
SS			89.126*** (18.451)									
SFB				73.978*** (16.389)								
SCR					87.768*** (24.751)							
SOP						84.158*** (21.642)						
SCW							57.418 (50.704)					
SNW								25.466 (24.016)				
SC									24.119 (25.581)			
STD										71.588*** (18.271)		
SJA											69.495*** (17.977)	
SWE												71.621*** (19.549)

Standard Errors in parentheses.

\* / \*\* / \*\*\* indicate level of significance at the 10 percent / 5 percent / 1 percent respectively.

## V. CONCLUSION AND DISCUSSION

The main objective of our research is to find out the relationship between life satisfaction and job satisfaction and investigate the direction of causality between these two variables. Our results show that both job satisfaction and life satisfaction positively and significantly affect each other. The results also indicate that causality between job and life satisfaction runs in both directions. This bidirectional causality between JS and LS is consistent with Landry (2000), Bowling, et al. (2010), Mishra, et al. (2014), Headey and Muffels (2014) and Headey and Muffels (2014).

Our results are also in line with both the “spillover” theory and valence-expectancy theory. According to the “spillover” theory, experiences at work spill over into the experiences of one’s overall life (Dolan and Gosselin, 2000; Judge & Watanabe, 1993). According to Lawler’s “valence-expectancy” theory, the causality runs from LS to JS because the high level of satisfaction with a non-working domain of life produces

strong internal control, which leads to high expectation and strong instrumentality beliefs.<sup>4</sup>

On the other hand, if we see the magnitude of coefficient of both job satisfaction and life satisfaction it shows that although, both JS and LS influence each other, the effect of job satisfaction on life satisfaction is stronger than the effect of life satisfaction on job satisfaction as shown also by Iverson and Maguire (2000), Rode (2004) and Alghamdi (2015).

These results are in line with the “bottom-up” approach that suggests employees who enjoy their work show a high level of satisfaction with their life. According to Alghamdi (2015), a job can affect life satisfaction because it provides income, financial support and a sense of identity. However, life can contribute to job satisfaction through providing emotional stability and strong family assistance.

We also investigate the relationship between each of the twelve aspects of job satisfaction and life satisfaction. It is important to analyse this relationship because it provides a clear picture of the relationship between life satisfaction and job satisfaction. The examination of the results reveals that out of the twelve aspects of job satisfaction, seven aspects have a positive and significant relationship with life satisfaction. There is bidirectional causality that runs between life satisfaction and the seven aspects of job satisfaction (paid supervision, contingent rewards, fringe benefits, job autonomy, training and career development opportunities and work environment). These results are also supported by the “spillover” theory and “valence-expectancy” theory.

Satisfaction with operating procedures and promotion supports “spillover” and “bottom-up” approaches. The results indicate that satisfaction with operating procedures and promotion has a positive and highly significant effect on life satisfaction but conversely, life satisfaction has an insignificant effect on both variables. The results show that although satisfaction with the nature of work does not affect life satisfaction greatly, it still has a positive but small effect at 10 percent significance.

This relationship is also supported by “valence-expectancy” theory and “top-down” approach. Life satisfaction, and satisfaction with communication and co-workers have no effect on each other i.e., they are independent, as concluded by Mishra, et al. (2014). These findings are consistent with the “segmentation” theory. According to this theory, individuals try to separate their life domains in order to avoid experiences being transmitted between life domain (e.g. work) and overall life (Dolan and Gosselin, 2000).

If we compare the strength of their relationship, the magnitude of estimates reveals that eight aspects of job satisfaction (pay, supervision, promotion, contingent rewards, fringe benefits, job autonomy, training and career development opportunities and work environment) have a stronger effect on life satisfaction, rather than the effect of life satisfaction on these eight aspects of job satisfaction. Small values of coefficients of life satisfaction show that changes in life satisfaction have a small effect on the eight aspects of job satisfaction. Whereas large values of coefficients of the eight aspects of job satisfaction indicate these aspects strongly influence life satisfaction.

<sup>4</sup>Mishra, V., Nielsen, I., Smyth, R., & Newman, A. (2014). The Job Satisfaction-Life Satisfaction Relationship Revisited: Using the Lewbel Estimation Technique to Estimate Causal Effects Using Cross-Sectional Data: Discussion paper.

Existing literature suggests a strong relationship between life satisfaction and intrinsic job aspects (Mehta, 1978; Steiner and Truxillo, 1987) whereas our results provide mixed support for this relationship. Out of the seven aspects of job satisfaction that have bidirectional causal relation with life satisfaction, four aspects are extrinsic: pay, contingent rewards, fringe benefits, training and career development opportunities, and three aspects are intrinsic: supervision, job autonomy, and work environment. Similarly, satisfaction with communication and co-workers being intrinsic with promotion being extrinsic aspects of job satisfaction, are insignificantly related to life satisfaction.

### **Policy Implications**

The findings of this study have different practical implications as the results show a bidirectional relationship between life satisfaction, job satisfaction and different aspects of job satisfaction. However the effect of job satisfaction, and its different aspects, on life satisfaction is stronger than the effect of life satisfaction on job satisfaction. Hence, it recommends that organisations should guide their workers to deal with issues related to working and non-working domains as well as particularly focus on improving the extrinsic and intrinsic aspects of job satisfaction highlighted in the paper.

Therefore, the recommendations for organisations are to improve employee life satisfaction by adjusting factors of job satisfaction including pay, supervision, promotion, nature of work, contingent rewards, fringe benefits, operating procedures, job autonomy, training and career development opportunities and work environment. This may decrease high job turnover, absenteeism, and unsatisfactory work performance. This reduction leads to enhanced efficiency and productivity of an organisation as both life satisfaction and job satisfaction are positively linked to organisational performance. In addition, the government should develop welfare policies that enhance employee satisfaction with job and life together, particularly focusing on improving labour market conditions.

In future, larger sample and panel data can be used for this type of analysis in order to get more reliable and authentic results that can be generalised for the whole population.

## APPENDIX A

## Section: JOB SATISFACTION

Please Encircle the One Choice Against Each Question		Disagree, Strongly Disagree	Moderately Disagree	Neither agree nor disagree	Agree, Agree moderately	Agree strongly
<b>Pay</b>						
1	You feel that you are being paid a fair amount for the work you do.	1	2	3	4	5 6 7
2	You feel satisfied with your chances for salary increases.	1	2	3	4	5 6 7
3	You feel unappreciated in term of pay that you are receiving from the organisation.	1	2	3	4	5 6 7
4	You feel that you are adequately paid compared to your colleagues at other organisations.	1	2	3	4	5 6 7
<b>Promotion</b>						
5	There is really too little chance for promotion on your job.	1	2	3	4	5 6 7
6	Those who do well on the job have a fair chance of being promoted.	1	2	3	4	5 6 7
7	You feel that you have better Promotion opportunities relative to other organisations.	1	2	3	4	5 6 7
8	You are satisfied with your chances for promotion.	1	2	3	4	5 6 7
<b>Supervision</b>						
9	Your supervisor is quite competent in doing his/her job.	1	2	3	4	5 6 7
10	Your supervisor is unfair to you.	1	2	3	4	5 6 7
11	Your supervisor is concerned about the welfare of those who are working under him/her	1	2	3	4	5 6 7
12	You like your supervisor.	1	2	3	4	5 6 7
<b>Fringe Benefits</b>						
13	You are not satisfied with the benefits you receive.	1	2	3	4	5 6 7
14	The benefits you receive are as good as most other organisations offer.	1	2	3	4	5 6 7
15	The benefit package you have is equitable.	1	2	3	4	5 6 7
16	The benefits offered provide security for you and your family	1	2	3	4	5 6 7
<b>Contingent Rewards</b>						
17	Your organisation offers rewards based on your performance	1	2	3	4	5 6 7
18	Your performance incentives are clearly linked to standards and goals	1	2	3	4	5 6 7
19	Employees are recognised for good work performance	1	2	3	4	5 6 7
20	When you do a good job, you receive the recognition for it that you deserve.	1	2	3	4	5 6 7
<b>Operating Procedures</b>						
21	Most of the rules and procedures make doing a good job difficult.	1	2	3	4	5 6 7
22	Your efforts to do a good job are seldom blocked by red tape.	1	2	3	4	5 6 7
23	You have too much to do at work.	1	2	3	4	5 6 7
24	You have too much paperwork.	1	2	3	4	5 6 7
<b>Co-Workers</b>						
25	You like the people you work with.	1	2	3	4	5 6 7
26	You feel you have to work harder at your job because of the incompetence of people you work with.	1	2	3	4	5 6 7
27	You enjoy with your coworkers.	1	2	3	4	5 6 7
28	There is too much bickering and backbiting at work.	1	2	3	4	5 6 7
<b>Nature Of Work</b>						
29	Sometimes you feel that your job is meaningless.	1	2	3	4	5 6 7
30	You like doing the things you do at work.	1	2	3	4	5 6 7
31	You feel a sense of pride in doing your job.	1	2	3	4	5 6 7
32	Your job is enjoyable.	1	2	3	4	5 6 7
<b>Communication</b>						
33	Communications seem good within this organisation.	1	2	3	4	5 6 7
34	You often feel that you do not know what is going on with the organisation.	1	2	3	4	5 6 7
35	The goals of this organisation are confusing.	1	2	3	4	5 6 7
36	Work assignments are not fully explained.	1	2	3	4	5 6 7
<b>Training And Career Development Opportunities</b>						
37	You have an opportunity to develop your own special abilities	1	2	3	4	5 6 7
38	You have opportunity to utilise your skills and talents	1	2	3	4	5 6 7
39	Organisation provide support for additional training and education	1	2	3	4	5 6 7
40	Your job requires that you keep on learning new things	1	2	3	4	5 6 7
<b>Job Autonomy</b>						
41	you have enough freedom in your position to take independent action when you need	1	2	3	4	5 6 7
42	You have a lot of freedom to decide how to do your own work	1	2	3	4	5 6 7
43	You decide yourself when to take a leave	1	2	3	4	5 6 7
44	Employees in the organisation have necessary authority to perform their duties effectively	1	2	3	4	5 6 7
<b>Work Environment</b>						
45	Your physical working conditions are good	1	2	3	4	5 6 7
46	You feel physically safe in your work environment	1	2	3	4	5 6 7
47	There is adequate noise control to allow you to focus on your work	1	2	3	4	5 6 7
48	General work area is adequately heated/cooled	1	2	3	4	5 6 7



**5: “How satisfied are you with how safe you feel?”**

<b>Completely Dissatisfied</b>				<b>Neutral</b>			<b>Completely Satisfied</b>
1	2	3	4	5	6	7	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**6: “How satisfied are you with feeling part of your community?”**

<b>Completely Dissatisfied</b>				<b>Neutral</b>			<b>Completely Satisfied</b>
1	2	3	4	5	6	7	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**7: “How satisfied are you with your future security?”**

<b>Completely Dissatisfied</b>				<b>Neutral</b>			<b>Completely Satisfied</b>
1	2	3	4	5	6	7	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**REFERENCES**

- Ahn, N. (2007). Value of intangible job characteristics in workers job and life satisfaction: How much are they worth? *Documentos de trabajo (FEDEA)*10, 1–21.
- Alghamdi, F. S. (2015). Another look at job and life satisfaction among employees: Evidence from a developing country. *American Journal of Industrial and Business Management*, 5(01), 11.
- Aziri, B. (2011). Job satisfaction: A literature review. *Management Research and Practice*, 3(4), 77–86.
- Bowling, N. A., Eschleman, K. J., & Wang, Q. (2010). A meta-analytic examination of the relationship between job satisfaction and subjective well-being. *Journal of Occupational and Organisational Psychology*, 83(4), 915–934.

- Bruck, C. S., Allen, T. D., & Spector, P. E. (2002). The relation between work–family conflict and job satisfaction: A finer-grained analysis. *Journal of Vocational Behaviour, 60*(3), 336–353.
- Castriota, S. (2006). Education and happiness: A further explanation to the Easterlin Paradox. (Unpublished paper).
- Chacko, T. I. (1983). Job and life satisfactions: A causal analysis of their relationships. *Academy of Management Journal, 26*(1), 163–169.
- Clark, A. E., & Oswald, A. J. (1994). Unhappiness and unemployment. *The Economic Journal, 104*(424), 648–659.
- Coad, A., & Binder, M. (2014). Causal linkages between work and life satisfaction and their determinants in a structural VAR approach. *Economics Letters, 124*(2), 263–268.
- Cummins, R. A. (2013). *Personal wellbeing index, 5th Edition*. Melbourne: Australian Centre on Quality of Life, Deakin University.
- Degutis, M., & Urbonavicius, S. (2013). Determinants of subjective wellbeing in Lithuania. *Engineering Economics, 24*(2), 111–118.
- Di Tella, R., Macculloch, R. J., & Oswald, A. J. (2003). The macroeconomics of happiness. *Review of Economics and Statistics, 85*(4), 809–827.
- Diner, E. (1984). Subjective well-being. *Psychological Bulletin, 95*, 542–575.
- Dolan, & Gosselin, E. (2000). *Job satisfaction and life satisfaction: Analysis of a reciprocal model with social demographic moderators*: Universitat Pompeu Fabra.
- Dolan, Peasgood, T., & White, M. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *Journal of Economic Psychology, 29*(1), 94–122.
- Drobnič, S., Beham, B., & Präg, P. (2010). Good job, good life? Working conditions and quality of life in Europe. *Social Indicators Research, 99*(2), 205–225.
- Easterlin, R. A. (1974). Does economic growth improve the human lot? Some empirical evidence. *Nations and Households in Economic Growth, 89*, 89–125.
- Erdogan, B., Bauer, T. N., Truxillo, D. M., & Mansfield, L. R. (2012). Whistle while you work a review of the life satisfaction literature. *Journal of Management, 38*(4), 1038–1083.
- Filiz, Z. (2014). An analysis of the levels of job satisfaction and life satisfaction of the academic staff. *Social Indicators Research, 116*(3), 793–808.
- Frey, B. S., & Stutzer, A. (2002a). The economics of happiness. *World Economics, 3*(1), 1–17.
- Frey, B. S., & Stutzer, A. (2002b). What can economists learn from happiness research? *Journal of Economic Literature, 40*(2), 402–435.
- Headey, B., & Muffels, R. (2014). Two-way causation in life satisfaction research: Structural equation models with granger-causation. Institute for the Study of Labour (IZA), Bonn. (IZA Discussion Paper No. 8665).
- Headey, B., Veenhoven, R., & Wearing, A. (1991). Top-down versus bottom-up theories of subjective well-being. *Social Indicators Research, 24*(1), 81–100.
- Iverson, R. D., & Maguire, C. (2000). The relationship between job and life satisfaction: Evidence from a remote mining community. *Human Relations, 53*(6), 807–839.
- Judge, T. A., & Watanabe, S. (1993). Another look at the job satisfaction-life satisfaction relationship. *Journal of Applied Psychology, 78*(6), 939.

- Kaneko, K. (2013). Life satisfaction factors on a remote island of Thailand: Case study of working and retired people in eastern region. *WMS Journal of Management*, 2(1), 7–20.
- Kantak, D. M., Futrell, C. M., & Sager, J. K. (1992). Job satisfaction and life satisfaction in a sales force. *Journal of Personal Selling & Sales Management*, 12(1), 1–7.
- Koutsoyiannis, A. (1977). *Theory of econometrics*. Macmillan.
- Landry, M. B. (2000). The effects of life satisfaction and job satisfaction on reference librarians and their work. *Reference & User Services Quarterly*, 166–177.
- Layard, P. R., & Layard, R. (2011). *Happiness: Lessons from a new science*: Penguin UK.
- Locke, E. A. (1976). The nature and causes of job satisfaction. *Handbook of Industrial and Organisational Psychology*, 1, 1297–1343.
- Lu, M. (2010). A Microeconomic analysis of happiness and life satisfaction: A statistical study in Germany. Paper presented at the 10th China Economics Annual Conference.
- Mafini, C., & Dlodlo, N. (2014). The relationship between extrinsic motivation, job satisfaction and life satisfaction amongst employees in a public organisation. *SA Journal of Industrial Psychology*, 40(1), 01–12.
- Mehta, P. (1978). Objective and subjective factors in employees' satisfaction in life and work. *Indian Journal of Industrial Relations*, 433–444.
- Mishra, V., Nielsen, I., Smyth, R., & Newman, A. (2014). The job satisfaction-life satisfaction relationship revisited: Using the Lewbel estimation technique to estimate causal effects using cross-sectional data: ISSN 1441-5429; Monash University, Department of Economics. (Discussion Paper 26/14).
- Mottaz, C. (1984). Education and work satisfaction. *Human Relations*, 37(11), 985–1004.
- Naz, S. (2015). Relationship of life satisfaction and job satisfaction among Pakistani army soldiers. *Journal of Business Research Turk*, 7(1), 7–25.
- Orpen, C. (1978). Work and nonwork satisfaction: A causal-correlational analysis. *Journal of Applied Psychology*, 63(4), 530.
- Oswald, A. (1997). Happiness and economic performance. *The Economic Journal*, 107(445), 1815–1831.
- Oswald, A. (2002). *Are you happy at work? Job satisfaction and work-life balance in the US and Europe*. Warwick WBS Event, Warwick Hotel, New York, NY, 5.
- Parlow, A. (2010). The work life conflict: The relationship between job and life satisfaction. (Unpublished Paper).
- Rode, J. C. (2004). Job satisfaction and life satisfaction revisited: A longitudinal test of an integrated model. *Human Relations*, 57(9), 1205–1230.
- Rode, J. C., & Near, J. P. (2005). Spillover between work attitudes and overall life attitudes: Myth or reality? *Social Indicators Research*, 70(1), 79–109.
- Schmitt, N., & Bedeian, A. G. (1982). A comparison of LISREL and two-stage least squares analysis of a hypothesised life–job satisfaction reciprocal relationship. *Journal of Applied Psychology*, 67(6), 806.
- Spector, P. E. (1985). Measurement of human service staff satisfaction: Development of the job satisfaction survey. *American Journal of Community Psychology*, 13(6), 693–713.

- Steiner, D. D., & Truxillo, D. M. (1987). Another look at the job satisfaction-life satisfaction relationship: a test of the disaggregation hypothesis. *Journal of Organisational Behaviour*, 8(1), 71–77.
- Suppa, N. (2012). Job characteristics and subjective well-being in Australia—A capability approach perspective. *Ruhr Economic Paper* (388).