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CAPITAL STRUCTURE AND THE 2003 TAX CUTS

Richard H. Fosberg
William Paterson University, Deptartment of Economics, USA.

KEYWORDS

Capital structure, tax rates, cost of capital.

ABSTRACT

The main purpose of this study is to determine if the 2003 tax cuts caused firms to change their capital structures. I find considerable evidence that a capital structure shift did occur. The median market debt ratio of the sample firms decreased from .078 in 2002 to .046 in 2006. After adjusting for known capital structure determinants like firm size and profitability, the data indicates that beginning shortly after the tax cuts were enacted firms began to shift their capital structures and by the end of 2003 they had, on average, about 4% more equity in their capital structures than expected. This increased to about 6% more equity than predicted in 2004 and remained at about the same level through 2006. The results indicate that no capital structure shift occurred immediately prior to the 2003 tax cuts as firms had, on average, the predicted amount of equity capital in their capital structures in 2002. It was also found that firms that did not pay dividends shifted their capital structures more than dividend payers and that the capital structure changes were facilitated by an increase in internally generated equity funds and by issuing equity and retiring debt.

1. INTRODUCTION

On May 28, 2003 when the Jobs and Growth Tax Relief Reconciliation Act of 2003 (the Act) was signed into law, the tax rates on dividend and capital gains income were reduced and made equal for tax payers in any tax bracket. Specifically, the tax rate on dividend income for tax payers in the top four tax brackets was reduced to 15%. It had been 38.6% for investors in the highest tax bracket. The tax rate on dividend income was reduced to 5% for tax payers in the bottom two tax brackets. Additionally, the tax rate on capital gains income was reduced from 20% to 15% for those in the top four tax brackets while the capital gains tax rate was reduced to 5% for those in the bottom two tax brackets. The reduction in the dividend tax rate was predicted to have a number of effects including a rise in the number of firms initiating dividends and an increase in the amount of dividends paid by firms that were already paying dividends. The tax cut was also predicted to cause a rise in the price of the stock of dividend paying firms, a reduction in the cost of capital of dividend paying firms, an increase in business investment and an increase in consumption expenditures and savings by those receiving dividend income (Brown, Liang and Weisbrenner (2007), Chetty and Saez (2005), Poterba (2004)). In a more formal analysis, Fosberg (2010) shows that in his model a decrease in the personal dividend tax rate will cause a dividend paying firm's share price to increase, the cost of equity capital to fall and the amount of debt (equity) in the firm's capital structure to fall (rise). Most of the above predictions are based on the assumption that a firm's marginal shareholder is not tax-exempt.

A number of authors have attempted to determine what the actual effects of the dividend tax cut were. Generally, the results of these empirical tests confirmed the predicted effects. Specifically, the major events in the passage of the Act were found to generate higher abnormal returns for

firms with higher dividend payouts while firms that did not pay dividends had higher abnormal returns than dividend payers (Auerbach and Hassett (2005, 2006) and Gadarowski, Meric, Welsh and Meric (2007)). Additionally, the number of firms initiating and raising dividends increased significantly following the passage of the Act (Brown, Liang and Weisbrenner (2007), Chetty and Saez (2005) and Julio and Ikenberry (2004),). Chetty and Saez found that the percentage of firms paying dividends increased from 20% to 25% with total dividend payments increasing by $5 billion (20%). Share ownership by various groups was shown to be a significant determinant of which firms raised or initiated firms. Share ownership by executives, individuals and taxable institutional shareholders were shown to be positively correlated with the probability that a firm would increase or initiate dividends. Contradictory results were obtained for the effect of share ownership by tax-exempt institutions on the probability of a dividend increase or initiation (Brown, Liang and Weisbrenner (2007) and Chetty and Saez (2005)). Firms with a large independent shareholder on the board were also more likely to initiate dividends while having a large outside shareholder not on the board of directors had no effect on firm dividend payments (Chetty and Saez (2005). Additionally, the probability of a dividend increase or initiation was shown to be inversely related to executive stock option ownership (Brown, Liang and Weisbrenner (2007), Chetty and Saez (2005)).

In this study, I seek to investigate an issue not addressed by the above authors. Did the 2003 tax cuts cause firms to adjust their capital structures to include more equity (less debt) capital? The results indicate that, on average, firms reduced (increased) the amount of debt (equity) in their capital structures following the 2003 tax cuts and maintained those capital structure adjustments through at least 2006. For example, the median market debt ratio of the sample firms decreased from .078 in 2002 to .046 in 2006. After adjusting for known capital structure determinants like firm size and profitability, the data indicates that beginning shortly after the tax cuts were enacted firms began to shift their capital structures and by the end of 2003 they had, on average, approximately 4% more equity in their capital structures than expected. This increased to about 6% more than predicted in 2004 and remained at about the same level through 2006. The results indicate that no capital structure shift occurred immediately prior to the 2003 tax cuts as firms had, on average, the predicted amount of equity capital in their capital structures in 2002. Further, it was found that firms that did not pay dividends shifted their capital structures more than firms that did. If the capital markets anticipated this, that could be a reason why non-dividend paying firms had higher abnormal returns around the events associated with the passage of the tax cuts than did dividend payers. Additionally, firms that increased their dividends after the tax cuts shifted their capital structures less than those that did not. The last two results suggest that the dividend payments inhibited the ability of firms to shift their capital structures. The capital structure shift was facilitated by an increase in net equity issuance and internally generated equity funds and the retirement of debt.

The organization of the rest of the paper is as follows. Section 1 contains a discussion of the sample selection procedures and summary statistics for selected variables. The main empirical analysis is presented in Section 2. A summary of results and conclusion are contained in Section 3.

2. SAMPLE SELECTION

For each year from 2001 through 2007 an initial sample of firms was taken from all firms listed on the current and research files of the COMPUSTAT data base. Firms in the financial services or utilities industries were excluded from all annual samples. To be included in the initial sample for a year a firm must have sufficient data available to calculate the firm's market and book debt ratios. A firm's market debt ratio (MDR) is defined to be book long-term debt divided by the market value of the firm. Firm market value is calculated as total assets less book common equity plus market common equity (common shares outstanding times share price). A firm's book debt ratio (BDR) is defined to be book long-term debt divided by total assets. This procedure yielded annual initial sample sizes ranging from 4,587 to 5,452 firms. Table 1 contains the mean and median values of the MDRs and BDRs for each sample year. The mean MDR drifts up slightly from 2001 to 2002 and then beginning in 2003 declines significantly through 2006 before ticking up in 2007. The major decreases in mean MDR occurred in 2003 and 2004 with the mean MDR dropping from .147 in 2002 to .119 in 2003 and declining further to .102 in 2004. From 2004 to 2006 the mean MDR was relatively stable. Although the yearly median MDRs are smaller than the corresponding mean MDRs, the same general pattern of declining MDRs is apparent in the medians. The median MDRs decline from .078 in 2002 to .058 in 2003 to .047 in 2004 and remain relatively stable through 2007. A similar but weaker pattern of declining debt ratios is observed when capital structure is measured by book debt ratios. The mean BDR declines from .169 in 2002 to .151 in 2004 while the median BDR falls from .109 to .091 over the same time period. The significantly larger values of the means as compared to the medians for both debt ratio measures indicates the presence of a significant number of sample firms with large amounts of debt in their capital structures. This issue will be addressed later. Overall, these initial results are consistent with the prediction that firms would react to the 2003 tax reductions by decreasing (increasing) the amount of debt (equity) in their capital structures.

3. EMPIRICAL ANALYSIS

Numerous studies have shown that certain variables, like firm size and profitability, affect the amount of debt a firm employs in its capital structure. In the next part of the empirical analysis I incorporate these variables into the analysis in order to control for the effects of these variables on firm capital structure. The set of control variables used in this analysis is similar to that used by Fama and French (2002) and Flannery and Rangan (2006). As larger firms have been found to employ more debt in their capital structures, the natural log of total assets (Assets) is used as a size proxy. The profitability measure used is earnings before interest and taxes divided by total assets (EBIT). Firm profits have been shown to be inversely related to the amount of debt capital a firm employs. Net property, plant and equipment divided by total assets (PPE) is used to proxy for the amount of tangible assets that a firm has. More tangible assets are associated with a greater use of debt financing. Depreciation and amortization divided by total assets (Depr) is used to measure the quantity of non-debt tax shields the firm has available. Non-debt tax shields are inversely correlated with the amount of debt in a firm's capital structure. The market to book ratio (M/B) is used to capture company investment opportunities. The market to book ratio is calculated as total assets less book value of common equity plus market value of common equity divided by total assets. Firms with more investment opportunities generally employ less debt in their capital structures. Assets uniqueness is measured by research and development expense divided by total assets (R&D). The more unique a firm's assets the less debt they usually have in their capital structures.

We initially estimate the effects of the control variables on firm capital structure by regressing the MDRs of the sample firms in year t on the one year lagged values of the control variables for the sample firms (equation 1). Lagged values are used to mitigate any endogeny problems associated with the variables. The coefficients from equation 1 are estimated using MDR data from 2001 and 2002.

$$MDR_{i,t} = a_1 + a_2 Assets_{i,t-1} + a_3 EBIT_{i,t-1} + a_4 PPE_{i,t-1} + a_5 Depr_{i,t-1} + a_6 M/B_{i,t-1} + a_7 R\&D_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

To obtain a predicted MDR for firm i in year t, the coefficient estimates from equation 1 are multiplied by the one year lagged values of the control variables for firm i. The predicted MDR for firm i in year t is subtracted from the actual MDR for firm i in year t to yield a capital structure deviation (CSD) for each firm in each sample year (equation 2).

$$CSD_{i,t} = Actual\ MDR_{i,t} - Predicted\ MDR_{i,t} \quad (2)$$

If the CSD is positive (negative), the firm has more (less) than the predicted amount of debt (equity) in its capital structure. If the 2003 tax cuts induced firms to increase the amount of equity in their capital structures their CSDs should be negative beginning in 2003.

3.1. Actual versus Predicted Capital Structures

Table 2 presents the mean capital structure deviations for the sample firms for years 2003 through 2007. Column one reports the deviations for the full of sample firms for which sufficient data was available to do the requisite calculations. The mean deviation of -.028 for 2003 indicates that, on average, the sample firms had 2.8% less debt in their capital structures than predicted for 2003. That deviation, as well as all the others reported in Table 2, is significant at the 1% level. This suggests that even though the tax cuts did not become law until May 28, 2003, by the end of 2003 firms had already begun to significantly increase the amount of equity in their capital structures. The capital structure adjustments continued into 2004 as well as, on average, firms had 4.1% less than the predicted amount of debt in their capital structures in 2004. The capital structure deviations increased by another .2% in both 2005 and 2006 before decreasing by 1.1% in 2007. One possible explanation for the 2007 trend reversal is that the Democrats took control of control Congress in January 2007 and promised to end some of the 2003 tax cuts. Firms may have begun adjusting to the anticipated tax increases by reversing their previous capital structure adjustments. Another possible explanation is that the financial market turmoil occurring in 2007 made it impossible or in advisable for firms to maintain their 2006 capital structures. Which, if any, of these theories accounts for the decline in the mean CSD in 2007 requires more data than is currently available and will not be attempted here. In sum, the results from column 1 of Table 2 are generally consistent with the predictions previously discussed. Specifically, firms began reducing (increasing) the amount of debt (equity) in their capital structures shortly after the passage of the 2003 tax cuts and continued those adjustments into 2004. By the end of 2004 the capital structure adjustments were largely complete and were maintained through at least 2006.

The results from Table 1 and the inspection of the sample data indicate that there are a significant number of sample firms with large amounts of debt in their capital structures. These high debt firms could be biasing the results in at least two ways. If high debt firms have a strong preference for large amounts of debt in their capital structures they would be unlikely to make significant reductions in their debt even in the presence of the tax cuts. This would cause the reported results to underestimate the effect of the 2003 tax cuts. On the other hand, high debt firms may find elevated debt levels undesirable and would try to reduce their debt levels even without the tax cuts. This would tend to cause the reported results to overestimate the effect of the tax cuts. To investigate this issue the one percent of firms with the highest MDRs in each year were trimmed from the sample and the analysis was repeated. The results of this analysis are presented in column 2 (MDR 1% Tr). The results with the high debt firms eliminated are almost identical to the results with the full sample of firms. Evidently, the presence of high debt firms is not significantly biasing the reported results. Another possible source of bias comes from including firms with very high losses in the sample. These firms are not likely to have the same access to the equity markets that profitable firms would have and, therefore, may not be able to significantly increase the amount of equity in their capital structures even though they desired to do so. This would tend to cause the reported results to underestimate the capital structure adjustments that firms actually made. To adjust for this potential source of bias, in each year firms with EBIT that is less than or equal to -.5 (losses are 50% or more of total assets) are eliminated from the sample and the analysis is repeated. The one percent of firms with the highest MDRs in each year are also eliminated. The results of this analysis are contained in column 3 (EBIT > -.5). As expected, the elimination of the high loss firms from the analysis increases the magnitude of the capital structure adjustments found for the sample firms. Specifically, the means values of the capital structure deviations increases (in absolute value) by .3% to .4% in each of the sample years.

Another source of bias could come from including firms with little or no debt in their capital structures in the analysis. Even if the tax cuts would have caused these firms to desire to decrease the amount of debt in their capital structures, their paucity of debt would have allowed little or no reduction in their observed debt ratios. This bias would cause the reported results to underestimate the effect of the tax cuts. To investigate this issue, I begin by eliminating from the annual samples all firms with an MDR of .03 or less (3% or less debt in their capital structure). Firms with high debt ratios and large losses are also removed from the sample. The results of the analysis are presented in column 4 (MDR > .03). The removal of the low debt firms caused the average CSD to increase in each year from 2003 through 2006. The mean CSD increased by 1.2% in 2003 and 1.4% in 2004. Thus, by the end of 2004, on average, the sample firms had 5.8% less debt (more equity) in their capital structures than expected. Removing firms with five percent or less debt in their capital structures had little effect on the average CSD (see column 5 (MDR > .05)). Only including firms with MDRs greater than .10 significantly reduced both the sample size and the average CSD (not reported). These results indicate that including low debt firms in the analysis will result in a significant underestimation of the effect of the tax cuts on firm capital structure.

Table 3 contains the results of a similar analysis conducted using BDRs as the leverage measure. In this analysis, the book debt ratio of firm i in year t ($BDR_{i,t}$) is used as the dependent variable in equation 1. The coefficients of the variables in equation 1 are estimated using BDR data from 2001 and 2002 along with the lagged values of the control variables. The estimated coefficients along with the actual lagged values of the controls variables for each firm in each year are then used determine a predicted CSD for each firm in each year. The CSD for firm i in year t is calculated as the actual $BDR_{i,t}$ less predicted $BDR_{i,t}$. With the full sample of firms (column 1), the mean CSDs begin at -.9% in 2003, increase to -2.1% in 2005 before declining in 2007. All the CSDs reported in Table 3 are significant at the 1% level. These results are similar to those

obtained using MDRs except that the values of the deviations are one third to one half the size. When the one percent of firms with the highest BDRs in each year are trimmed (BDR 1% Tr) the results remain virtually unchanged (column 2). A slight increase in mean CSD results when firms with large losses are eliminated from the sample (column 3). Eliminating firms with little or no debt in their capital structures does not significantly affect the results (columns 4 and 5). In sum, the results obtained using BDRs confirm that the 2003 tax cuts did result in firms using less debt (more equity) in their capital structures.

3.2. Regressions with Panel Data

Next, an analysis is conducted on the sample firms in which all the sample data (from years 2001 through 2007) is used in a single regression with yearly dummy variables added to equation 1 to measure the annual CSDs. The dummy variables D02 through D07 are set equal to one if the MDR data is from the specified year and zero, otherwise. For example, D02 is set equal to 1 if the MDR data is from 2002 and zero otherwise. This methodology offers several advantages over the previous technique. First, by using all the sample data in a single regression, better estimates of the coefficients of the control variables should be obtained. Second, if the relationship between the control variables and firm capital structure has changed during the sample period this should be reflected in the estimates of the coefficients of the control variables. And lastly, the coefficient of the 2002 dummy variable will indicate whether the capital structure changes previously reported began prior to the 2003 tax cuts. The results of this analysis using MDRs as the leverage measure, are contained in Table 4. With the full sample of firms, all of the control variables except one have the expected sign and most are significant at the 5% level or better. The coefficients of the annual dummy variables capture the deviation of the actual MDR from the predicted MDR and are equivalent to the previously defined CSDs. A negative coefficient indicates that the firm has less (more) than the predicted amount of debt (equity) in its capital structure. The coefficient of D02 (.002) is positive, small and insignificant suggesting that in 2002 the control variables, on average, accurately predict a firm's capital structure. That is, there is no tendency in 2002 for firms to have more or less than the predicted amount of debt in their capital structure. For 2003, the dummy variable coefficient (-.028) is much larger (in absolute value), negative and significant at the 1% level. The dummy variable coefficient rises to -.042 in 2004 and continues drifting higher through 2006 before falling in 2007. The dummy variable coefficients for 2004 through 2007 are significant at the 1% level. Thus, by 2006 the sample firms have, on average, 4.6% less debt (more equity) in their capital structures than predicted by the control variables. The dummy variable coefficients for 2003 through 2007 in all subsequent regressions reported in Table 4 are significant at the 1% level.

Removing the one percent of firms in each year with the highest MDRs has little effect on the values or significance levels of the coefficients of either the control variables or annual dummy variables (column 2). The coefficient of D02 remains small and insignificant while the coefficients of the other annual dummy variables remain reliably negative. If high debt and large loss firms are removed from the sample the coefficients of the control variables all take on their predicted signs and are significant at the 5% level or better (column 3). The coefficient of the 2002 dummy variable remains small and insignificant while the coefficients of the other annual dummies rise by .2% to .3% and maintain their significance levels. If firms with 3% or less debt in their capital structures are also eliminated from the sample the coefficient of the 2002 dummy variable remains small and insignificant while the coefficients of the other annual dummy variables increase by 1.1% to 1.4% (column 4). This confirms the previous finding that including firms with little or no debt in their capital structure in the sample of firms causes empirical tests to

underestimate the effect of the tax cuts on firm capital structure. If firms with 5% or less debt are excluded from the sample the results are little changed (column 5). Assuming the results obtained when the high debt, low debt and large loss firms are eliminated from the sample are the most representative of the effects of the 2003 tax cuts, then clearly the tax cuts resulted in significant numbers of firms using less debt (more equity) in their capital structures. Specifically, by the end of 2003 firms had, on average, 4.3% less debt in their capital structures than expected and by 2004 this had risen to 5.8% less debt. Also, the insignificance of the coefficient of the 2002 dummy variable in all regressions strongly indicates that the capital structure adjustments noted above did not begin prior to the tax cuts. Overall, the results from Table 4 are almost identical to those reported in the corresponding columns of Table 2 and suggest that the findings reported here are robust with respect to the methodology used to measure capital structure shifts. Additionally, since the results in Table 2 were calculated using two years (2001 and 2002) of sample data to estimate the control variable coefficients while those contained in Table 4 were calculated using seven years (2001 through 2007) of data, this suggests that there was no significant shift in the relationship between firm capital structure and the control variables during the sample time period.

An analysis identical to that performed in Table 4 was also conducted using BDRs. The results of that analysis (not reported) are very similar to those reported in Table 3. As the MDR is the theoretically preferred capital structure measure, it will be the capital structure measure used in all subsequent empirical analyses. Additionally, to remove the effects of various sources of bias on the empirical results, the base sample of firms for all further analyses will exclude high debt, low debt and large loss firms.

One of the more interesting empirical results associated with the 2003 tax cuts is that firms that paid no dividends had higher abnormal returns during the period surrounding the passage of the tax cuts than dividend paying firms. This was somewhat unexpected since the dividend income tax rate cut was much larger than the capital gains tax rate cut for middle and upper income investors. One possible explanation for this is that dividend paying firms were paying out part of their internally generated equity funds as dividends and therefore had less internally generated equity available to increase (reduce) the amount of equity (debt) in their capital structure in response to the tax cuts. Conversely, firms that paid no dividends had more internally generated equity available and were better able to shift the amount of equity in their capital structure to the new optimal level implied by the tax cuts. A greater shift in capital structure should result in a greater reduction in the firm's average cost of capital and, if this was anticipated by the capital market, a greater increase in stock price (higher abnormal returns) around the passage of the tax cuts for firms that did not pay dividends. To test this theory the sample firms were divided into two groups, those that paid dividends in the fourth quarter of 2002 and those that did not. A regression like that employed in Table 4 was then run on each subgroup of firms. The results of these regressions are reported in the first two columns of Table 5. To conserve space the coefficients of the control variables are not reported. For both the payer and non-payer subgroup the coefficient on the 2002 dummy variable is small and insignificant. However, for each of the other annual dummy variables the coefficient of the non-payer subgroup is much higher than that of the dividend payer subgroup. For 2003, the non-payers coefficient is -.047 versus -.031 for the dividend payers. The difference in the coefficients is significant at the 5% level ($t = 2.11$). Similarly, for 2006 the coefficient is -.069 for the non-payers and -.044 for the payers. The difference in the coefficients is significant at the 1% level ($t = 3.42$). These results indicate that, on average, non-payers did adjust their capital structures more (added more equity capital) than dividend payers in the years following the tax cuts.

The above results suggest that the payment of dividends reduces the ability of a firm to adjust its capital structure in response to the 2003 tax cuts. I further investigate this issue by testing whether firms that raised their dividends following the tax cuts adjusted their capital structures to the same degree as firms that didn't increase their dividends. The previous results imply that firms that increased their dividends should not have adjusted their capital structure as much as firms that did not. To test this prediction the sample firms were divided into two subgroups, those that increased their dividends in 2003 and those that did not. Capital structure regressions like those used to produce the results in Table 4 were run on each subgroup of firms. The results are reported in the last two columns of Table 5. For both subgroups, the coefficient of the 2002 dummy is again small and insignificant. For the annual dummy variables for years 2003 through 2007, the coefficients for the no dividend increase subgroup are larger in each year than for the dividend increase subgroup. This difference is small in 2003 (.003) but increases over time until the difference in coefficient values reaches .030 in 2006. The difference in the 2006 coefficients is significant at the 1% level (t = 3.55). These results imply that firms that increased their dividends as a result of the tax cuts had less internally generated equity capital available to shift their capital structures than firms that did not.

3.3. Sources of Capital Structure Changes

Next, an investigation of how the capital structure changes were implemented was conducted. The means firms have of increasing the amount of equity in their capital structure include retaining more internally generated equity funds, issuing more equity securities, and/or retiring debt. Looking first at the issuance of equity, the net equity issuance to total assets ratio was calculated for each firm in the 2006 sample. The 2006 sample was chosen because that is the year in which the capital structure changes reached their peak. Net equity issuance is calculated as the value of common and preferred shares issued less the value of common and preferred shares repurchased. Column 1 of Table 6 contains the median values of net equity issuance. Net equity issuance almost doubled from a median of .030% of assets in 2002 to .056% in 2003. In 2004, median net equity issuance increased nearly fourfold to .215% of assets. Net equity issuance remained above the pre-tax cut (2002) level through 2006. The percentage of firms that were net equity issuers also increased significantly after the tax cuts, rising from 54% in 2002 to 62% in 2004. The percentage of equity issuers was higher in every year after the tax cuts (2003 through 2006) than before (2002). Looking next at the internally generated equity funds to total assets ratio (IGEF), it is apparent that an increase in internally generated equity funds also contributed to the increase in the amount of equity capital in the sample firms' capital structures (column 2). Internally generated equity funds is calculated as EBITDA less interest expense, income taxes and preferred and common dividends. The median IGEF ratio increased from 7.2% in 2002 to a peak of 9.1% in 2004 and remained above pre-tax cut levels through 2006. To ascertain if debt retirement played a role in the capital structure shift the net debt change to total assets ratio (D. Chg.) was calculated for each firm. Net debt change is the value of new borrowings less the value of debt retired. The median values of the sample firms' net debt change ratio are presented in column 3. On average, the sample firms retired debt in each year from 2003 through 2005, with the largest debt retirement occurring in 2003 (.24% of assets) and decreasing thereafter. Additionally, debt retirement seems to have played, on average, almost as large a role in a firm's capital structure shift as equity issuance. In sum, firms implemented (on average) the shift to less debt (more equity) in their capital structures by a combination of issuing more equity, generating more internal equity funds and paying off debt.

4. CONCLUSION

One of the predicted effects of the 2003 tax cuts was that the reduced cost of equity capital for firms that resulted from the cut in the personal dividend and capital gains tax rates would lead companies to increase the amount of equity in their capital structures. I find considerable evidence that such a capital structure shift did occur. The median market debt ratio of the sample firms decreased from .078 in 2002 to .046 in 2006. After adjusting for known capital structure determinants like firm size and profitability, the data indicates that beginning shortly after the tax cuts were enacted firms began to shift their capital structures and by the end of 2003 they had, on average, about 4% more equity in their capital structures than expected. This increased to about 6% more than predicted in 2004 and remained at about the same level through 2006. The results indicate that no capital structure shift occurred immediately prior to the 2003 tax cuts as firms had, on average, the predicted amount of equity capital in their capital structures in 2002. Further, it was found that firms that did not pay dividends increased the amount of equity in their capital structures more than dividend paying firms that did. Additionally, firms that increased their dividends after the tax cuts shifted their capital structures less than those that did not. The last two results suggest that the dividend payments inhibited the ability of firms to shift their capital structures. The capital structure shift was facilitated by an increase in net equity issuance and internally generated equity funds and the retirement of debt.

Table 1: Firm Debt Ratios

A firm's market debt ratio (MDR) is defined to be book long-term debt divided by the market value of the firm. Firm market value is calculated as total assets less book common equity plus market common equity (common shares outstanding times share price). A firm's book debt ratio (BDR) is defined to be book long-term debt divided by total assets.

	MDR		MDR	
	Mean	Median Meant	Mean	Median Mean
2001	.142	.067	.172	.107
2002	.147	.078	.169	.109
2003	.119	.058	.164	.108
2004	.102	.047	.151	.091
2005	.100	.047	.151	.090
2006	.100	.046	.153	.093
2007	.111	.049	.160	.098

Table 2: Market Debt Ratio Changes after the 2003 Tax Cuts

The numbers in the body of the table are the means of the sample firms' capital structure deviations (CSDs). $CSD_{i,t} = Actual\ MDR_{i,t} - Predicted\ MDR_{i,t}$. A firm's market debt ratio (MDR) is defined to be book long-term debt divided by the market value of the firm. Firm market value is calculated as total assets less book common equity plus market common equity (common shares outstanding times share price). EBIT is the firm's earnings before interest and taxes divided by total assets ratio. The numbers in parentheses are t-values.

	CSD				
	Full	MDR 1% Tr	EBIT > -.5	MDR >.03	MDR >.05
2003	-.028** (14.7)	-.028** (15.4)	-.031** (16.4)	-.043** (17.9)	-.044** (17.7)
2004	-.041** (22.1)	-.040** (23.5)	-.044** (25.7)	-.058** (26.9)	-.059** (26.7)
2005	-.043** (18.3)	-.043** (19.6)	-.048** (27.8)	-.058** (25.9)	-.058** (25.0)
2006	-.045** (22.6)	-.045** (24.4)	-.048** (27.6)	-.058** (26.2)	-.059** (25.5)
2007	-.034** (16.6)	-.035** (18.1)	-.038** (19.5)	-.039** (15.4)	-.037** (14.2)

* and ** represent significance at the 5% and 1% levels, respectively.

Table 3: Book Debt Ratio Changes after the 2003 Tax Cuts

The numbers in the body of the table are the means of the sample firms' capital structure deviations (CSDs). $CSD_{i,t} = Actual\ BDR_{i,t} - Predicted\ BDR_{i,t}$. A firm's book debt ratio (BDR) is defined to be book long-term debt divided by total assets. EBIT is the firm's earnings before interest and taxes divided by total assets ratio. The numbers in parentheses are t-values.

	CSD				
	Full	BDR 1% Tr	EBIT > -.5	BDR >.03	BDR >.05
2003	-.009** (3.72)	-.009** (3.90)	-.010** (4.44)	-.010** (3.58)	-.020** (3.51)
2004	-.018** (7.94)	-.018** (8.28)	-.020** (9.11)	-.021** (7.22)	-.021** (7.29)
2005	-.021** (8.40)	-.022** (9.25)	-.026** (11.2)	-.025** (8.73)	-.026** (9.06)
2006	-.020** (8.46)	-.020** (8.87)	-.023** (9.63)	-.020** (6.96)	-.022** (7.39)
2007	-.014** (5.51)	-.014** (5.68)	-.016** (6.42)	-.009** (2.88)	-.008** (2.77)

* and ** represent significance at the 5% and 1% levels, respectively.

Table 4: Regression Analysis of Market Debt Ratio Changes

A firm's market debt ratio (MDR) is defined to be book long-term debt divided by the market value of the firm. Firm market value is calculated as total assets less book common equity plus market common equity (common shares outstanding times share price). EBIT is the firm's earnings before interest and taxes divided by total assets ratio. Assets is the natural log of total assets. EBIT is the earnings before interest and taxes to total assets ratio. PPE is the net property, plant and equipment to total assets ratio. Depr is the depreciation and amortization expense to total assets ratio. M/B is the firm market value to book value ratio. R&D is the research and development expense to total assets ratio. D02 through D07 are the annual dummy variables for years 2002 through 2007. They take a value of one in the indicated year and zero, otherwise. The numbers in parentheses are t-values.

	Full	MDR 1% Tr	EBIT > -.5	MDR >.03	MDR >.05
Inter	-.024**	-.023**	-.054**	-.250**	-.278**
	(8.93)	(9.19)	(11.9)	(48.5)	(51.1)
Assets	.014**	-.014**	-.013**	-.003**	-.001**
	(45.8)	(49.0)	(37.5)	(6.65)	(2.61)
EBIT	-.001*	-.007*	-.083**	-.147**	-.162**
	(2.41)	(2.24)	(10.0)	(15.0)	(15.6)
PPE	.190**	-.172**	-.161**	-.098**	-.088**
	(47.6)	(48.0)	(28.5)	(20.4)	(18.2)
Depr	-.005	-.003	-.081**	-.195**	-.192**
	(1.72)	(1.21)	(3.59)	(6.88)	(6.61)
M/B	-.000	.000	-.002*	-0.24**	-.024**
	(1.40)	(1.66)	(2.20)	(11.2)	(10.0)
R&D	.010*	-.008*	-.252**	-.307**	-.312**
	(1.40)	(2.35)	(6.46)	(13.4)	(13.2)

Table 4 continued

D02	.002	.002	.002	-.001	-.001
	(0.58)	(0.74)	(0.48)	(0.22)	(0.36)
D03	-.028**	-.027**	-.029**	-.043**	-.045**
	(9.36)	(9.64)	(9.69)	(11.6)	(11.7)
D04	-.042**	-.041**	-.044**	-.058**	-.060**
	(14.8)	(15.5)	(15.7)	(16.3)	(16.4)
D05	-.045**	-.044**	-.047**	-.058**	-.059**
	(15.7)	(16.5)	(16.9)	(16.0)	(15.8)
D06	-.046**	-.045**	-.048**	-.059**	-.060**
	(15.9)	(16.7)	(16.9)	(16.1)	(15.9)
D07	-.035**	-.035**	-.038**	-.039**	-.038**
	(11.7)	(12.4)	(12.6)	(10.1)	(9.55)
N	32,896	32,568	30,107	17,844	16,295
Adj. R^2	.19	.19	.21	.16	.15

* and ** represent significance at the 5% and 1% levels, respectively.

Table 5: Dividends and Market Debt Ratio Changes

The control variables are the variables on the right hand side of equation 1. D02 through D07 are the annual dummy variables for years 2002 through 2007. They take a value of one in the indicated year and zero otherwise. The numbers in parentheses are t-values.

	Dividend Payer		Dividend Increase	
	Yes	No	Yes	No
Inter.	.253 (26.0)	.234 (40.0)	.274** (21.9)	.235** (41.2)
Control Variables	Yes	Yes	Yes	Yes
D02	-.002 (0.38)	.001 (0.17)	-.004 (0.54)	.002 (0.36)
D03	-.031 (5.33)	-.047 (10.4)	-.040** (5.51)	-.043** (10.2)
D04	-.047 (8.38)	-.061 (14.2)	-.046** (6.64)	-.058** (14.3)
D05	-.043 (7.49)	-.064 (14.6)	-.038** (5.26)	-.061** (14.7)
D06	-.044 (7.66)	-.069 (15.7)	-.036** (5.00)	-.066** (15.8)
D07	-.029 (4.76)	-.050 (10.5)	-.021** (2.64)	-.047** (10.5)
N	4,278	12,768	2,510	13,988
Adj. R^2	.21	.17	.26	.16

* and ** represent significance at the 5% and 1% levels, respectively.

Table 6: Sources of the Capital Structure Changes

St. Iss. is the net equity issuance to total assets ratio. IGEF is the internally generated equity funds to total assets ratio. D. Chg. is the net debt change to total assets ratio. %+ is the percentage of sample firms with a positive value for St. Iss.

	St. Iss.	IGEF	D. Chg.
2001	.00018	.07303	.00000
%+	52		
2002	.00030	.07212	-.00355
	54		
2003	.00056	.07753	-.00241
	56		
2004	.00215	.09055	-.00079
	62		
2005	.00135	.08488	-.00020
	59		
2006	.00076	.08515	.00000
	57		

REFERENCES

Amromin, P., P. Harrison and S. Sharpe. (2008) "How Did the 2003 Dividend Tax Cut Affect Stock Prices?" Financial Management, 625-46.

Auerbach, A. and K. Hassett. "The 2003 Dividend Tax Cuts and the Value of the Firm: An Event Study," in A. Auerbach, J. Hines, and J. Siemrod, Eds., *Taxing Corporate Income in the 21st Century*, Cambridge, UK, Cambridge University Press.

Auerbach, A. and K. Hassett. (2006) "Dividend taxes and firm Valuation: New Evidence," *American Economic Review*, Vol. 96 No. 2, 119-23.

Black, F. (1976) "The Dividend Puzzle." *Journal of Portfolio Management*, Vol. 2, Winter, 5-8.

Brav, A., J. Graham, C. Harvey, and R. Michaely. (2005) "Payout Policy in the 21st Century," Journal of Financial Economics," Vol. 77, 483-527.

Brav, A., J. Graham, C. Harvey, and R. Michaely. (2008) "Managerial Response to the May 2003 Dividend Tax Cut," Financial Management, 611-24.

Brown, J., N. Liang and S. Weisbenner. (2007) "Executive Financial Incentives and Payout Policy: Firm Response to the 2003 Dividend Tax Cut," *Journal of Finance*, Vol.62 No.4, 1935-65.

Chetty, R. and E. Saez. (2005) "Dividend Taxes and Corporate Behavior: Evidence From the 2003 Dividend Tax Cut." *Quarterly Journal of Economics*, Vol. 120 No. 3, 791-833.

Fama, E, and K. French. (2001) "Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay," *Journal of Financial Economics*, Vol. 60, 3-43.

Fama, E. and K. French. (2002) "Testing Trade-Off and Pecking Order Predictions About Dividends and Debt," *Review of Financial Studies*, Vol. 15 No.1, 1-33.

Flannery M. and K. Rangan. (2006) "Partial Adjustment Toward Target Capital Structures," *Journal of Financial Economics*, Vol. 79, 469-506.

Fosberg, R. (2010) "The Corporate Effects of Personal Taxation", working paper, William Paterson University.

Gadarowshi, C., G. Meric, C. Welsh and I. Meric. (2007) "Dividend Tax Cut and Security Prices: Examining the Effect of the Jobs and Growth Tax Relief Reconciliation Act of 2003." *Financial Management*, Vol., 89-105.

Julio, B. and D. Ikenberry. (2004) " Reappearing Dividends, *Journal of Applied Corporate Finance*, Vol. 16 No.4, 89-100.

Poterba, J. (2004) "Taxation and Corporate Payout Policy." American *Economic Review*, Vol. 94 No. 2, 171-5.

White, H. (1980) "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direst Test for Heteroskedasticity," Econometrica 48, 817-838.

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INPUT - OUTPUT INDICATORS OF KNOWLEDGE-BASED ECONOMY AND TURKEY

Özcan Karahan
Balikesir University, Department of Economics, Turkey

KEYWORDS

Knowledge-based economy, input-output indicators.

ABSTRACT

This paper aims to present a new and more effective approach to examine statistical picture of Knowledge Based Economy. Reviewing and criticizing the methodologies presented by international economic organizations, we have classified relevant statistics under the components of "input" and "output" indicators. Such a classification setting up "causal connection" among the indicators will enable us to analyze the dynamic of new economy in more effective manner. Furthermore, this kind of classification shed light on the economic policies towards Knowledge-Based Economy much more. In order to find out it's placement in New Economy according to classification of indicators presented in this study, Turkish Economy has also been examined by comparison with the cases of European Union (EU 15) and OECD countries.

1. INTRODUCTION

Review of economic history illustrates a number of transformations in economic source of production. Lately, the concept of "knowledge" as an engine of economic development has gained huge significance. This emerging economic system due to its reliance on knowledge is generally defined as "Knowledge Based Economy" (KBE). Wealth creating assets shift from physical things to intangible resources based on knowledge. New Economy results from a fuller recognition of the importance of knowledge in all aspects of the economy. OECD also defined KBE as "the economies which are directly based on the production, distribution and use of knowledge and information" (OECD, 1996: 3). Thus, it is indicated that generation and the exploitation of knowledge have come to play the predominant part in the creation of wealth in KBE.

However, knowledge has always been understood to contribute to economic growth. Indeed, the economy has always been driven by knowledge leading to innovation and technical change. And knowledge-based institutions have helped store and share knowledge for centuries. But in recent times the significance attributed to knowledge in economic development has markedly increased. What we see today is essentially more of the same but operating on a bigger scale and at a faster pace. "Economy is more strongly and more directly rooted in the production, distribution and using of knowledge than even before" (Foray and Lundwall, 1996: 27). Therefore the knowledge-based economies today complement efforts to improve economy-wide productivity through enhancement Total Factor Productivity. The studies on analyzing the performance of industries show that knowledge-intensive industries have a higher value-added multiplier and higher productivity compared with traditional or non-knowledge intensive industries much more (Lee and Gibson, 2002: 306).

Accordingly analytical approaches now are being developed so that knowledge can be included more directly in production functions of growth theories. Investment in knowledge can increase the productive capacity of the other factors of production as well as transform them into new products and process. And since these knowledge investments are characterized by increasing returns, they are the key to long-term economic growth (OECD, 1996: 11). Recently there has been a growing interest in the contribution of knowledge to total factor productivity growth. Economists have already developed new growth theories to explain the forces which drive long-term economic growth (Romer, 1994).

However, the concept of knowledge is generally complicated and hard to quantify. Because of this reason our understanding of what is knowledge-based economy is constrained by the extent and quality of the available knowledge-related indicators. Indeed, one can no longer assume that the overwhelmingly available information would answer the research questions precisely since the observations and indicators of KBE are knowledge intensive. The knowledge economy may remain a vague concept without measurable definitions or effective classification of indicators. It might be hard or impossible to offer a set of practical evidence based policy recommendations to policy makers. For all that we need to measure and classify the indicators of the knowledge economy in a better way. In other words, improvement of measures or classifying methods for knowledge-based economy is crucial to understand its dynamics and produce more effective policies.

Accordingly, this study aims to present a suite of statistical indicators which capture the essence of a KBE. Before statistical indicators can be developed, a framework on the subject (dimensions) is needed. These dimensions would enable relevant statistical indicators to be grouped, organized and thus analyzed in a logical manner. For this aim, first section reviews the existing frameworks on KBE presented by different international economic organization to draw up an appropriate framework. Later, we will develop main thematic areas in relation to indicators of KBE. In this section, the indicators of a knowledge-based economy are examined in terms of inputs and outputs, Themes can be used to classify existing indicators and improve our understanding and appraisal of the knowledge economy. Finally, using this analysis we will try to find out Turkey's placement in knowledge-based economy by comparison with the cases of European Union countries.

2. REVIEW OF INTERNATIONAL INSTITUTIONS' METHODOLOGIES

The powerful argument of a transition to a "knowledge-based economy" implies a systems transformation at the structural level across nations. Following this lead the focus of the efforts at the international economic organizations has been to develop indicators of the relative knowledge-intensity of new economies. Therefore, there have been a lot of discussions on the determining the indicators of KBE at the international level. However, there is still no internationally agreed framework for measuring KBE. Different frameworks have been developed by international organizations, including World Bank (WB), Organization for Economic Co-operation and Development (OECD), European Union (EU), and Asia Pacific Economic Cooperation (APEC). This section reviews the frameworks or methodologies asserted by different international economic organizations.

World Bank Institute's Knowledge for Development (K4D) Program has developed the *Knowledge Assessment Methodology* (KAM) in 1999 with the object of measuring and analyzing the knowledge economy. This methodology is based on the supposition that the knowledge economy comprises four pillars: Economic Incentive and Institutional Regime, Education and Human Resources, Innovation System and Information and Communication Technology (World Bank Institute, 2007: 1). Four knowledge economy pillars are necessary for sustained creation, adoption, adaptation and use of knowledge in domestic economic production, which will consequently result in higher value added goods and services. KAM is based on 83 structural and qualitative variables that serves as proxies for the four knowledge economy pillars: Overall Economic Performance (9), Economic Incentive and Institutional Regime Index (19), Innovation System Index (24), Education and Human Resources Index (19) and ICT Index (12). There are two frequently used modes of the KAM: The Basic Scorecard and Knowledge-based Economy Index.

Table 1: World Bank Knowledge Economy Indicators (Basic Scorecards)

1. Performance 1.1 Average annual GDP growth (%) 1.2 Human Development Index
2. Economic Incentive and Institutional Regime 2.1 Tariff and non-tariff barriers 2.2 Regulatory Quality 2.3 Rule of Law
3. Education and Human Resources 3.1 Adult Literacy rate (%age 15 and above) 3.2 Secondary Enrolment 3.3 Tertiary Enrolment
4. Innovation System 4.1 Researchers in R-D, per million populations 4.2 Patent Applications granted by the USPTO, per million populations 4.3 Scientific and technical journal articles, per million populations
5. Information Infrastructure 5.1 Telephones per 1000 persons, (telephone mainlines + mobile phones) 5.2 Computers per 1000 persons 5.3 Internet Users per 10000 persons

Source: World Bank Database, The Knowledge Assessment Methodology (KAM), website (www.worldbank.org/kam)

The *KAM Basic Scorecard* provides an overview of the performance of a country in terms of the pillars of the knowledge economy under 5 sub-titles. It includes 14 standard variables: two performance variables and 12 knowledge variables, with 3 variables representing each of the 4 pillars of knowledge economy. The Table-1 shows these indicators. The knowledge economy can also be quantified by means of a numerical index known as the *Knowledge Economy Index (KEI).* This calculated from the data of twelve indicators, three of which form a single pillar. The KAM Knowledge Economy Index (KEI) is an aggregate index that represents the overall level of development of a country or region in the Knowledge Economy. It summarizes performance of the four Knowledge Economy pillars and is constructed as the simple average of the normalized values of the 12 knowledge indicators of the basic scorecard. The basic scorecard can be thus seen as a disaggregated representation of the Knowledge Economy Index.

Another comprehensive analysis for KBE came from Organization for Economic Co-operation and Development (OECD). The concept of knowledge-based economy was firstly used in a document written for the meeting of the Committee on Science and Technology Policy in 1995. This paper discussed two themes: new growth theory and innovation performance in the framework of knowledge-based economy (OECD, 1995: 3). In 1996, after defining the knowledge economy as "economies which are directly based on the production, distribution and use of knowledge and information", it was suggested that improved indicators for the KBE are needed for the following tasks (OECD, 1996: 20); Measuring knowledge inputs, Measuring knowledge stocks and flows, Measuring knowledge outputs, Measuring knowledge networks, Measuring knowledge and learning.

Thus, OECD attempted to measure knowledge directly. However there are a lot of challenges in order to measure KBE with this way because of systematic obstacles to the creation of intellectual capital accounts to parallel all accounts of conventional fixed capital. Although it is at the heart of the KBE, knowledge itself is particularly hard to quantify and also price. To overcome the challenges, firstly indicators of knowledge creation and distribution at the firm level were suggested to be collected through innovation surveys. Later indicators for measuring knowledge and learning are needed to reflect efficiency and equity of education and training. In this regards, OECD developed human capital indicators with the aim of measuring private and social rates of return to investment in education and training (Leung, 2004: 6).

The first measurement exercise of OECD concerning KBE appeared in the form of a scoreboard of indicators in 1999. This document was prepared for the 1999 meeting of the Committee for Scientific and Technological Policy at Ministerial level. In this study nine of the thirty-two indicators were specifically located and analyzed under the concept of knowledge-based economy (OECD, 1999). As can be seen from Table-2, measurement covers the other four dimensions named: Information and Communication Technology, Science and Technology Policies, Globalization, and Output and Impact. Publication noted especially that ICT has been a major foundation of the KBE since its enormous and continuing advances make it possible to store, process and circulate an increasing amount of data rapidly and inexpensively. On the other hand, it argues that science and technology are a major aspect of globalization of the economy. ICT has made possible the globalization all of the form of life including scientific and technological activities. In other words Scientific and Technological activities are also increasingly performed on an international scale. Accordingly, innovation no longer depends solely on how firms, universities, research institutes and regulators perform, but increasingly on how they work together. Thus both development of ICT and globalization process have great importance on the diffusion and use of information and knowledge as well as its creation in the form of scientific and technological. To sum up, as can be also seen from the dimensions and their indicators in Table-2, OECD focus on interaction and positive externalities of this interaction among ICT development, Science and Technology improvement and increasing Globalization while determining the basic facts of KBE.

Beside the publication, concerning to determination of KBE's indicators above, there are also two significant issues: Growth project Reports and Industry and Technology Scoreboard of Industries. OECD's *Growth Project Reports* can probably be described as presenting a policy analysis rather than a statistical framework (OECD, 2001)**.** However, they provide a structure which can be used to describe the dimensions of a statistical framework. Its policy recommendations cover five broad areas; Stable and Open Macro-economic Environment, Diffusion of ICT, Fostering Innovation, Investing in Human Capital, Stimulating Firm Creation. *Industry and Technology Scoreboard of Indicators* are published by OECD every 2 year and includes a series of economic and science and technology indicators. OECD STI Scoreboard consists of 76 indicators under the 5 sub-titles: R&D and Innovation (15), Human Resources in Science and Technology (10), Patents (11), ICT (17), Knowledge Flows and the Global Enterprise (12), The Impact of Knowledge on Productive Activities (11). (OECD, 2005).

Table 2: OECD Knowledge Economy Indicators

1. Knowledge-Based Economy 1.1 Knowledge Investment (education, R&D and software) as % of GDP 1.2 Education of the adult population as % of the population aged 25-64 1.3 R&D expenditure as a percentage of GDP 1.4 Basic research expenditure as a percentage of GDP 1.5 Expenditure of Business R&D in domestic product of industry 1.6 Expenditure of Business R&D in manufacturing 1.7 Share of services in R&D expenditure 1.8 Expenditure on innovation as a share of total sales 1.9 Investment in venture capital as a percentage of GDP
2. Information and Communication Technology 2.1 ICT spending as % of GDP 2.2 PC penetration in households 2.3 Number of internet host per 1000 inhabitants 2.4 Percentage share of ICT industries in GDP 2.5 Share of ICT in patents granted by USPTO
3. Science and Technology Policies 3.1 Publicly funded R&D as % of GDP 3.2 Government R&D expenditure on health-defense-environment 3.3 Government R&D expenditure in total R&D expenditure 3.4 Business R&D expenditure in total R&D expenditure 3.5 Share of Government-Business R&D expenditure financed together 3.6 Tax subsidies rate for R&D
4. Globalization 4.1 Share of foreign affiliates in R&D 4.2 Share of foreign and domestic ownership in total inventions 4.3 Number of international technological alliances 4.4 Percentage of scientific publications with a foreign co-author 4.5 Percentage of patents with a foreign co-investor

5. Output and Impact
5.1 Scientific publications per 100 000 population
5.2 Share of countries in total EPO patent application
5.3 Share of firm creating any innovative output
5.4 GDP per employed person
5.5 Share of knowledge-based industries in total value added
5.6 Share medium-high technology industries in manufacturing export
5.7 Technology balance of payments as a percentage of GDP

Source: OECD, (1999), The Knowledge-Based Economy: A Set of Facts and Figures.

After World Bank and OECD, European Commission also developed a methodology called *European Innovation Scoreboard* as a measurement of new economy. It includes a set of indicators which together give an assessment of Europe's innovation performance. European Innovation Scoreboard focused on Innovation process basically while determines the indicators of knowledge-based economy. The scoreboard is designed to capture the main drivers of a knowledge-based economy plus several measures of innovation outputs. As can be seen from Table-3, European Innovation Scoreboard indicators are distributed among five categories under two sub-titles such as Innovation Input and Innovation Outputs. Dimensions under Innovation Output consist of Innovation Drivers (5), Knowledge Creation (5), and Entrepreneurship (6) while Innovation Inputs covers two dimensions like Application (5) and Intellectual Property Rights (5). This Scoreboard issues for a cross- country comparison of the innovation indicators to help identify national strength of member countries rather than determining the indicators of knowledge-based economy exactly. European Innovation Scoreboard has been published every year since 2001. Besides this scoreboard European Union publish Global Innovation Scoreboard in order to give possibility to member's country for compare their innovation capabilities with other countries in the world. Global Innovation Scoreboard includes only 12 indicators as summary version of European Innovation Scoreboard.

Table 3: European Union Knowledge Economy Indicators

(European Innovation Scoreboard)

1. Innovation Drivers (5) 1.1 New S&E graduates per 1000 population aged 20-29 1.2 Population with tertiary education per 100 population aged 25-64 1.3 Number of broadband lines per 100 population 1.4 Participation in life-long learning per 100 population aged 25-64 1.5 Percentage population age 20-24 completed secondary education
2. Knowledge Creation (5) 2.1 Public R&D expenditures (% of GDP) 2.2 Business R&D expenditures (% of GDP) 2.3 Share of medium high-tech and high-tech R&D 2.4 Share of enterprises receiving public funding for innovation 2.5 Share of University R&D expenditures financed by business sector
3. Innovation and Entrepreneurship (6) 3.1 SMEs innovating in-house (% of SME) 3.2 Innovative SMEs co-operating with others (% of SMEs) 3.2 Innovative expenditures (% of turnover) 3.4 Early-stage venture capital (% of GDP) 3.5 ICT expenditure (% of GDP) 3.6 SMEs using non-technological change (% of SMEs)
4. Application (5) 4.1 Employment in high-tech services (% of total workforce) 4.2 Exports of high technology products as share of total exports 4.3 Sales of new-to-market products (% of turnover) 4.4 Sales of new-to-firm not new-to-market products (% of turnover) 4.5 Employment in medium-high tech manufacturing (% of total)
5. Intellectual Property (5) 5.1 New European Patent Office patents per million 5.2 New United States Patent and Trademark Office per million 5.3 New Triad patents per million population 5.4 New community trademarks per million population 5.5 New community industrial designs per million population

Source: European Innovation Scoreboard, 2010, European Commission

Final comprehensive methodology concerning to indicators of knowledge-based economy was presented by Asia Pacific Economic Cooperation (APEC). The APEC framework was developed as part of a Project, "*Towards Knowledge-based Economies in APEC*", commissioned by the APEC Economic Committee in mid-1999. The aim of the Project was to provide the analytical basis useful for promoting the effective use of knowledge, and the creation and dissemination of knowledge among APEC economies. APEC KBE framework consists of 26 indicators under the four dimensions shown in Table -4.

APEC Economic Committee also analyzed the underpinnings of the knowledge-based economy and the four dimensions deduced that (APEC, 2001: 12-13);

- Pervasive innovation and technological change, supported by an effective national innovation system.
- Pervasive human resource development, in which education and training are of high standard, widespread and continue "throughout a person2s working life".
- Efficient infrastructure, operating particularly in information and communications technology (ICT).
- A business environment supportive of enterprise and innovation.

Table 4: APEC Knowledge Economy Indicators

1. Business Environment 1.1 Knowledge based Industries as % of GDP 1.2 Services Exports as of GDP 1.3 High-Tech Exports as of GDP 1.4 Foreign Direct Investment inward flow as % of GDP 1.5 Government transparency rating by World Competitiveness Yearbook 1.6 Financial transparency rating by World Competitiveness Yearbook 1.7 Competition policy rating by World Competitiveness Yearbook 1.8 Openness rating by World Competitiveness Yearbook
2. ICT Infrastructure 2.1 Number of mobile telephones in use per 1000 inhabitants 2.2 Number of telephone mainlines in use per 1000 inhabitants 2.3 Number of computers per 1000 inhabitants 2.4 Number of internet users as % of population 2.5 Internet hosts per 10000 2.6 Expected e-commerce Revenues, M$US

3. Innovation System
3.1 Scientists Engineers in R&D per million of the population
3.2 Full-time researchers per million of the population
3.3 Gross Expenditure on R&D (% of GDP)
3.4 Business Expenditure on R&D (% of GDP)
3.5 US Patents per annum
3.6 The number of technological cooperation among companies
3.7 The number of technological cooperation between company-university
4. Human Resource Development
4.1 Secondary enrolment (% of age group)
4.2 Natural Sciences Graduates per annum
4.3 Knowledge Workers (% of labor force)
4.4 Newspaper (per 1000 inhabitants)
4.5 Human Development Index

Source: APEC, (2000), "Towards Knowledge-Based Economies in APEC", APEC Economic Committee, p.195.

3. INPUT AND OUTPUT INDICATORS FOR KNOWLEDGE ECONOMY

As seen from previous section, to understand the degree to which an economy is a KBE, relevant statistical indicators have to be considered by different economic organization. The knowledge economy is intensively thought of and sometimes defined in terms of knowledge industries based ICT production or usage and /or high shares of highly educated labor. Each characteristic is populated by several statistical indicators. The methodologies of international organizations can be only viewed as a "descriptive" or "presentation" framework using different statistical indicators rather then trying to view those indicators within context of a statistical framework (Leung, 2004:5). The challenge here is how to combine various measures of the same concept and determine the interaction among them.

We set out a wide range of measures grouped under inputs and outputs in order to overcome these challenges. While different sets of statistical indicators have been selected and grouped according to different aspects in the above frameworks of international organization, they can be grouped into two dimensions: Input Indicators and Output Indicators. In other words, to fully understand the working of the KBE, classification of indicators such as input and output are required beyond the conventional classification of international organization presented in previous section. Input indicators show to investment or capacity building efforts for each dimension towards knowledge-economy transformation. On the other hand, output indicators determine what degree of knowledge economy a country has. Thus, output indicators illustrate the impact of input indicators or performance of a country towards knowledge economy.

Measuring knowledge economy in accordance with the input/output framework has also been need basic dimensions for consideration. Such an approach can aid analysis of basic properties of knowledge-based economy both in general and specific level. If we look at the OECD's definition of knowledge-based economies (economies which are directly based on the production, distribution and use of knowledge), it is clear that basic dimensions should consist of "knowledge production", "knowledge distribution" and "knowledge utilization" (Godin, 2006: 21). We also add "knowledge acquisition" as another dimension, although it is not in OECD's definition of knowledge-based economy, because in the globalization process presents a lot of opportunities to economies for getting the new knowledge from foreign resources. Thus, to get new knowledge, it is not required only to produce them. But also it is possible to acquire new knowledge from abroad in different ways in globalizing world. Finally Table-5 presents the "Input and Output Indicators" of Knowledge-based Economy concerning to four dimensions: "Knowledge Acquisition", "Knowledge Production", "Knowledge Distribution" and "Knowledge Utilization".

In this framework, the accumulation of knowledge, which is the basic dynamic for development in new economy, can be provided by both "Acquisition" and "Production". Acquisition of Knowledge can be perfectly provided by the way of making an economy fully openness to world in trade and Foreign Direct Investment (FDI). Thus openness degree of an economy, as input indicators, depends on the ratios of a country's trade (exports plus imports) and FDI inflows to its GDP. On the other hand, competitiveness level of an economy calculated by World Competitiveness Yearbook is accepted as an output indicator concerning to knowledge acquisition. Production of Knowledge, which is the other part of accumulation of knowledge, is required to invest on Scientific R&D. The share of expenditure on Scientific R&D in GDP and number of scientists are input indicators of the dimension of knowledge production. In this dimension, "scientific publications" is selected as output indicators.

The accumulation of knowledge leads to the creation of wealth only if the knowledge is effectively distributed and utilized. For this reason, distribution and utilization of knowledge are selected as other two basic dimensions. Distribution of Knowledge includes all form of disseminating or diffusion of knowledge by the way of Information and Communication Technologies (ICT) and transmission of knowledge by the way of education. Expenditures on the levels of tertiary and long-life education are input indicators while tertiary education enrolment and participation ratio of life-long learning shows output indicators. ICT spending as % of GDP is input indicators of knowledge distribution dimension while both Personnel Computer (PC) penetration and number of internet hosts per 1000 population indicate the outputs.

Utilization of Knowledge covers absorbing and transferring of knowledge from scientific form to technological form by the way of Technological R&D. OECD defines R&D to "comprise of creative work undertaken on a systemic basis in order to increase the stock of knowledge and the use of this stock of knowledge to devise new applications. In this approach, Scientific and Technological R&D are defined together. However, in our approach, we separates Scientific and Technological R&D each other. "R&D towards increasing the stock of knowledge" means Scientific R&D and this indicator is located in dimension of knowledge production as an input indicator. On the other hand, "R&D towards using of knowledge stock to devise new application" connotes "Technological R&D" and put in the dimension of knowledge utilization as an input indicator with number of engineers in per 1000 000 population. Patent application to European Patent Office (EPO), the shares of production and export of high-tech sectors are output indicators.

Table 5: Input and Output Indicators for Knowledge Economy

INDICATORS **DIMENSIONS**	**Input Indicators**	**Output Indicators**
Knowledge Acquisition	1. Export + Import / GDP 2. Foreign Direct Investment inward flow as % of GDP	1. Competitiveness Rating (World Competitiveness Yearbook)
Knowledge Production	3. Scientific R&D expenditure as a % of GDP 4. Number of Scientists in per 1000 000 population	2. Scientific Publications per 100 000 population
Knowledge Distribution	5. Tertiary Education Expenditure as a % of GDP 6. Long life learning Expenditure as a % of GDP 7. ICT spending as % of GDP	3. Tertiary Education per 1000 pop. 4. Participation life-long learning per 100 population 5. PC penetration per 1000 6. Number of internet host per 1000
Knowledge Utilization	8. Technological R&D expenditure as a % of GDP 9. Number of Engineers in per 1000 000 population	7. Share of patent application to EPO in total 8. Exports of high-tech products as a % of total 9. Production of high-tech sector as a % of total

4. TURKEY AND KNOWLEDGE-BASED ECONOMY

In this section, our aim is to find out Turkey's placement in Knowledge-based Economy using knowledge measurement system developed in previous part. We also analyze the relevant variables in Turkey comparing with the average values in European Countries that is EU 15 and OECD Countries. In this framework, one of the major obstacles in assessing precisely the Turkey's comparative position among other countries in the knowledge based economy is non availability of data on key parameters. Consequently, we have to combine some variables and drop some others because of deficiency of variables especially relating to Turkey. Table-6 and Table-7 present these new formulations of input and output indicators separately. Because of non-availability of variables concerning R&D expenditures on Science and Technology and the number of engineer and scientist separately, R&D Expenditure and Personnel in both side combines under the dimension of Knowledge Production and Utilization. Also tertiary and long-life learning education expenditures are calculated as total education expenditure under the dimension of knowledge distribution.

Looking at the tables, both input and output indicators under the dimension of Knowledge Acquisition show better value compared to other dimensions. The gaps between the variables of Turkey and EU 15 and OECD countries are lower in this dimension compared to other dimensions. Turkey adapts better relatively to the new economy in the form of integrating to international economic system. Turkey has the worst indicators in the field of knowledge production and utilization against other countries both in input-based and especially out-based. Indeed, national patent application per million populations in 2008 and Export of High-tech Products as a % of total in 2008 are 29 and 2 and quite lower than the relevant average values of EU 15 and OECD

countries. The average number of patent application per million populations and export of high-tech products as a % of total export are 201,2 and 13,73 in EU 15 countries while same value equal 328,1 and 13,78 in OECD countries, respectively.. In addition, difference of the values in between Turkey and other countries in output indicators is the much bigger than input indicators. This also shows the low output/input ratio in the dimension of knowledge production and utilization and indicates that Turkey has a low level of productivity or efficiency in using the inputs of knowledge production and utilization. Other trouble value concerning with output-based indicators for Turkey relates to "Life Long Learning per 100 population aged 25-64" in 2010 under the dimension of knowledge distribution. The value of this ratio is only 1, 80 in Turkey while 12,04 and 11,62 in average value of EU 15 and OECD countries, respectively. Industries need flexible worker's ability in modern knowledge economies because of increasing the accelerating speed of production technologies permanently. High ratios of public expenditure and participation of population in life-long learning programs would be the perfect complement to deficiencies in labor market in today. People needs continuously upgrade and adapt their skills to efficiently create and use of knowledge. From this point of view, policy makers in Turkey should give much more importance to life-long learning beside basic and tertiary education for improving human capital.

Table 6: Input Indicators of Knowledge Economy for Turkey and EU

Countries	Knowledge		Knowledge Production		Knowledge	
	Imp.+Exp. /GDP (2008)[a] (%)	FDI inflow / GDP (2009)[b] (%)	RD Expen-Diture/GDP (2008)[c] (%)	RD Workers per million (2008)[d] (%)	Education. Spending % share of GDP (2009)[e]	ICT Spending % share of GDP (2009)[f]
Australia	24,5	2,95	2,35	4259	4,4	n.a
Austria	56,5	3,02	2,67	4141	5,5	2,0
Belgium	85,3	12,89	1,96	3517	6,4	2,4
Canada	34,3	1,68	1,84	4535	4,8	1,7
Chile	34,8	8,00	0,33	355	4,0	0,3
Czech Rep.	74,8	1,51	1,47	2870	4,1	1.4
Denmark	53,7	1,26	2,87	6496	7,7	2,9
Estonia	45,7	8,01	1,29	2695	5,7	1,4
Finland	45,0	2,97	3,72	7689	6,1	2,9
France	27,7	1,32	2,12	3690	5,6	2,5
Germany	44,1	1,18	2,68	3667	4,6	2,6
Greece	28,3	0,75	0,58	1829	2,3	1,2
Hungary	81,7	3,26	1,01	1846	5,1	1,6
Iceland	45,9	0,52	2,64	7428	7,5	2,6
Ireland	78,3	11,90	1,45	3342	5,7	2,4
Israel	45,2	2,27	4,64	1450	5,5	2,7
Italy	29,1	0,78	1,23	1614	4,6	1,9
Japan	17,4	0,24	3,45	5189	3,4	2,8
South Korea	53,5	0,27	3,36	3476	4,8	n.a
Luxemburg	137,8	3,98	1,56	4499	5,7	1,5
Mexico	26,1	1,79	0,37	347	3,1	n.a
Netherlands	64,4	4,63	1,76	3074	5,5	2,8
New Zealand	33,9	4,15	1,02	3452	6,1	n.a
Norway	37,3	1,66	1,73	5643	5,9	n.a
Poland	28,9	3,02	0,60	1618	5,1	1,6
Portugal	33,9	1,15	1,50	3900	4,9	2,1
Slovak Rep.	76,8	0,4	0,47	2313	3,6	1,4
Slovenia	45,8	1,31	1,65	3484	5,2	1,6
Spain	29,8	0,58	1,35	2901	4,6	1,8
Sweden	43,2	2,68	3,30	5320	6,8	2,9
Switzerland	43,5	5,95	3,40	4320	5,24	n.a
U. K.	28,3	3,36	5,40	4112	1,77	3,7
U. S.	11,9	1,13	5,51	4673	2,79	3,3
EU 15	52,36	3,49	2,27	3986,1	5,18	2,37
OECD	46,89	3,04	2,16	3628,6	4,97	2,02
TURKEY	39,7	1,37	0,72	745	2,9	0,9

[a] Calculated by using OECD Database (website: http://stats.oecd.org)

[b] Calculated by using World Bank Database (website: http://data.worldbank.org)

[c, d, e] Obtained from World Bank Database (website: http://data.worldbank.org)

[f] Obtained from Eurostat, European Commission Database, (website: http://epp.eurostat.ec.europea.eu)

Table 7: Output Indicators of Knowledge Economy for Turkey and EU

Countries	Knowledge Acquisition	Knowledge Production and Utilization			Knowledge Distribution			
	Competi-tiveness Rating (2010)[a]	Scientific. Publicatio n per million people (2009)[b]	Patent Application per million people (2008)[c]	High Tech. Export as % of total (2008)[d]	Tertiary Education per 100 aged 25-64 (2007)[e]	Lifelong Learning per 100 aged 25-64 (2010)[f]	PC Using % of as aged 25-64 (2009)[g]	Internet Host % of as aged 25-64 (2009)[h]
Australia	92,17	894	129	12	33,0	na	76,3	74,2
Austria	84,08	602	283	11	17,6	13,2	76,5	73,5
Belgium	73,58	730	66	9	31,8	6,8	77,0	76,2
Canada	90,45	867	153	16	47,0	na	84,2	80,3
Chile	69,66	111	34	3	10,1	na	42,8	38,8
Czech Rep.	65,44	393	79	13	13,5	3,2	67,5	64,4
Denmark	85,58	1060	304	18	34,7	14,3	87,9	86,8
Estonia	62,64	398	58	6	32,4	9,8	72,5	72,4
Finland	80,00	1022	361	14	35,1	23,1	85,3	82,5
France	74,37	515	221	23	26,2	7,2	74,3	71,5
Germany	82,73	547	508	15	23,9	7,9	82,8	79,3
Greece	52,30	495	70	9	22,2	2,9	49,0	44,5
Hungary	54,12	255	76	25	17,7	3,1	64,8	61,8
Iceland	65,06	776	213	31	29,5	25,1	94,0	93,5
Ireland	78,14	565	181	24	30,8	10,2	69,7	67,4
Israel	80,32	851	198	18	24,6	na	67,6	63,1
Italy	56,32	434	147	7	12,9	6,3	51,4	48,8
Japan	72,09	592	2307	19	40,5	na	66,2	78,1
South Korea	76,24	440	2653	24	32,9	na	82,9	81,6
Luxemburg	86,86	222	108	10	24,0	8,5	88,5	87,3
Mexico	51,48	43	31	14	15,4	na	36,2	28,3
Netherlands	85,65	915	151	21	30,3	12,9	90,7	89,6
New Zealand	78,53	808	365	9	38,3	na	82,6	79,7
Norway	89,98	860	252	16	32,9	19,3	92,7	92,1
Poland	64,48	198	76	6	17,9	5,3	62,5	59,1
Portugal	57,09	384	57	4	13,5	4,7	53,9	48,3
Slovak Rep.	51,09	216	32	6	14,2	3,3	78,1	75,2
Slovenia	48,68	652	187	5	15,2	13,9	67,4	64,3
Spain	58,75	478	76	6	28,5	10,4	65,8	62,6
Sweden	90,89	1076	218	13	30,5	32,4	91,8	90,8
Switzerland	96,12	1167	240	26	29,9	26,8	81,3	78,3
U. K.	76,80	772	267	22	30,5	19,9	85,9	83,6
U. S.	99,09	709	725	21	39,5	na	74,3	68,4
EU 15	74,87	654,46	201,2	13,73	26,16	12,04	75,36	72,84
OECD	70,65	607,48	328,1	13,78	26,57	11,62	73,46	71,1
TURKEY	51,11	118	29	2	9,7	1,8	37,9	36,4

[a] The Competitiveness Yearbook 2010, IMD p.19.

[b, c, d] World Bank Database, (website: http://data.worldbank.org)

[e] OECD Database (website: http://stats.oecd.org)

[f] European Innovation Scoreboard 2010, European Commission, p.57

[g, h] International Telecommunication Union, ICT Database, (http://www.itu.int/ITU - /ict/publications/world)

5. CONCLUSION

One of the major obstacles in assessing precisely the level of knowledge-based economy is non availability of agreement on key parameters. There is a huge need for analysis, both in understanding its characteristics and dynamics, and in identifying the most appropriate routes for policy development. The aim of this study is to present a new methodology in order to better capture and measure the KBE.

We draw up a new indicators set for KBE by reviewing the existing frameworks on KBE issued by different international economic organization. We set out a range of inputs and outputs measures grouped under four dimensions. Each dimension is basically derived from based on the acquisition, production, and distribution and utilization of knowledge which is basic engine of development in new economy. These dimensions include relevant statistical indicators in the form of input-based and output-based. Thus nine knowledge leading indicators and nine knowledge driven outcomes are determined to comprehensively define and characterize the knowledge-based economy.

After new analytical framework was presented, Turkish Economy has been analyzed in order to find out its placement in new economy. Figures are much more unfavorable for Turkey concerning to dimension of knowledge production and utilization. Output/input ratio is also quite low in this dimension since output-based indicators are much worse than input-based indicators. Therefore, policy makers should basically focus on the activities increasing the efficiency of knowledge production and utilizing inputs for successful transformation of Turkey towards knowledge-based economy. Beside it seems that life-long learning policies needs special policy interest in Turkey because of relatively its low level value. In period of rapid technological change of new economy, it is essential to increase adult and worker participation in life-long learning beyond basic and tertiary education.

REFERENCES

APEC, (2000), “Towards Knowledge-Based Economies in APEC”, APEC Economic Committee.

APEC (2001), “The New Economy and APEC”, APEC Economic Committee

DPT, (2011), “International Economic Indicators”, Ankara

European Commission, (2010), European Innovation Scoreboard.

European Commission. (2011), “Science Technology and Innovation in Europe”.

European Commission, Eurostat, website (http://epp.eurostat.ec.europea.eu)

Foray D and B-A Lundwall (1996), “Knowledge-based Economy: From the Economics of Knowledge to the Learning Economy”, in Employment and Growth in the Knowledge-based Economy, Paris.

Godin Benoit, (2006), “The Knowledge-Based Economy: Conceptual Framework or Buzzword?” Journal of Technology Transfer, 31, p. 17-30.

International Institute fro Management Development, (2010) World Competitiveness Yearbook 2010.

International Telecommunication Union, ICT Database (http://www.itu.int/ITU -/ict/publications/world)

Lee Kyu Sang, David V. Gibson (2002), “Towards Knowledge-based Economy in Korea: Metrics and Policy”, International Journal of Technology, Policy and Management, Vol:2, No:3, 2002.

Leung K. C. Stephen, (2004), "Statistics to Measure the Knowledge-based Economy: The Case of Hong Kong", Asia Pacific Technical Meeting on Information and Communication Technology Statistics, 30 November 2004, Wellington.

OECD (1995), "The Implication of the Knowledge-based Economy for Future Science and Technology Policies" OECD/GD (95) 136, Paris.

OECD (1996), "The Knowledge-based Economy" OECD / STI Outlook, Paris.

OECD (1999), "The Knowledge-Based Economy: A Set of Facts and Figures", Paris.

OECD (2001), "The New Economy: Beyond the Hype, Final Report on the OECD Growth Project" OECD, Paris.

OECD, (2005), "Science, Technology and Industry Scoreboard: Towards a Knowledge-based Economy", Paris.

Romer Paul (1994), "The Origin of Endogenous Growth", Journal of Economic Perspectives, Vol: 8.

World Bank Database, "The Knowledge Assessment Methodology" - KAM (website: www.worldbank.org/kam)

World Bank Institute, (2007), "Measuring Knowledge in the World's Economies", Knowledge for Development Program

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EFFECT OF TRADE LIBERALIZATION ON ECONOMIC GROWTH OF DEVELOPING COUNTRIES: A CASE OF BANGLADESH ECONOMY

Umme Humayara Manni[1], Munshi Naser Ibne Afzal[1]

[1]Universiti Brunei Darussalam, Faculty of Business, Economics and Policy Studies, Brunei.

KEYWORDS

Trade liberalization, economic growth, developing countries, Bangladesh economy, OLS technique, openness, export, import, inflation

ABSTRACT

The objective of this paper is to assess the impact of trade liberalization on Bangladesh economy between the periods 1980 to 2010. This research analyzes the achievements of the economy in terms of important variables such as growth, inflation, export and import after trade liberalization. The paper uses simple Ordinary Least Square (OLS) technique as methodology for empirical findings. The analysis clearly indicates that GDP growth increased consequent to liberalization. Trade liberalization does not seem to have affected inflation in the economy. The quantitative analysis also suggests that greater openness has had a favourable effect on economic development. Both real export and imports have increased with greater openness. Liberalization policy certainly improves export of the country which eventually leads higher economic growth after 1990s. The findings of this study can be an interesting example for trade liberalization policy study in developing countries.

1. INTRODUCTION

Like many developing countries, the primary focus of policies in Bangladesh is to obtain high and sustainable growth. However, to achieve and maintain a higher growth rate, policy makers need to understand the determinants of growth as well as how policies affect growth. Trade liberalization policy in 1990 opened up the opportunity for the Bangladesh economy to enhance economic growth and foster overall development. Openness can have a positive effect on economic growth, exports, imports, FDI and remittance of a country. The history of Bangladesh's economy starts in the 1960s, where the then East Pakistan's economy grew by an annual average rate of around 4 per cent. About a fifth of that economy was destroyed during the Liberation War of 1971, and severe dislocations caused at that time left Bangladesh on a slower economic growth trajectory for the following two decades. Then the economy accelerated sharply from 1990 due to mainly trade openness and restoration of democracy (Islam, 2001). In the last two decades Bangladesh economy was characterized by successful expansion of export-oriented garment industry, and the implementation of a 'Green Revolution' (A significant increase in agricultural productivity resulting from the introduction of High-yield varieties of grains, the use of pesticides) in rice production. They enabled Bangladesh to survive the decline of the world market for its former stable exports of jute and jute textiles, and to redeploy its resources in line with its comparative advantage. This study uses OLS technique to find out the impact of trade openness on export, import, inflation and overall economic growth during the period of 1980 to 2010. This study breaks down the objective of finding out the impact of trade liberalization on economic growth of

Bangladesh into four main sections. Starting with introduction, literature review in section 1 where it highlights some work on trade liberalization and economic growth of developing countries, section 2 is the methodology, section 3 discuss the results and findings and subsequently section 4 draws the conclusion.

2. LITERATURE REVIEW OF TRADE LIBERALIZATION IN DEVELOPING COUNTRIES

Most of the economic literature considers that trade liberalization leads to an increase in welfare derived from an improved allocation of domestic resources. Import restrictions of any kind create an anti-export bias by raising the price of importable goods relative to exportable goods. The removal of this bias through trade liberalization will encourage a shift of resources from the production of import substitutes to the production of export-oriented goods. This, in turn, will generate growth in the short to medium term as the country adjusts to a new allocation of resources more in keeping with its comparative advantage (McCulloch, Winters and Cirera, 2001). The most compelling argument for greater liberalization comes from the effects on economic efficiency, which promotes private investment and economic growth. Higher growth in turn helps lower poverty by increasing employment and real incomes of the poor. In an influential paper, Krugman (1990) summarized the reasons why trade liberalization is good for growth in developing countries. Firstly, Developing countries have production patterns that are skewed towards labor-intensive service, agriculture and manufacturing. People have low per capita incomes and markets in such countries are usually small. A liberalized trade regime allows low-cost producers to expand their output well beyond that demanded in the domestic market. Secondly, whereas industrialization based on protection of domestic industries thus results in even-higher capital intensity of production, the open trade regime permits enjoyment of constant returns to scale over a much wider range and finally import substitution regimes normally give bureaucrats considerable discretion either in determining which industries should be encouraged or in allocating scarce foreign exchange in a regime of quantitative restrictions, leading to serious efficiency losses. On the other hand, open trade regimes force greater reliance on the market. Empirical evidence on the positive effects of liberalization on growth is quite abundant (Dollar, 1992; Frankel and Romer, 1999; Dollar and Kaaray, 2001; Bhagwati and Srinivasan, 2001; Wacziarg, 1998). However, there are some critics who dispute these findings on methodological ground (Rodrik, 1996; Rodriguez and Rodrik, 1999). Rodriguez and Rodrik caution that their main intention is to challenge the over-enthusiasm on the questionable outcomes of many researches showing strong positive correlation between openness and growth rather than to convey the message of trade protection is good for growth. The most well-known recent study that provides evidence on trade liberalization, growth and poverty reduction is that of Kraay and David Dollar (2001). The study concludes that one third of the developing countries of the world, described as “rapid globalizers”, did extremely well in terms of income growth and poverty reduction over the past two decades or so. These countries, which include Bangladesh, India and Sri Lanka in South Asia, have experienced large increases in trade and significant reduction in tariff and non-tariff barriers. Bangladesh, for instance, saw its trade GDP ratio almost double (during the course of the 1990s decade). In contrast, the remaining two-thirds of the developing world, with a large concentration in Africa, that did not experience trade expansion due to a lack of sufficient outward orientation, performed poorly both in terms of growth and poverty reduction. Other studies look at the relationship between openness and growth, the presumption being growth is good for the poor. Thus, Wacziarg (1998) investigates the links between trade policy and economic growth using data from a panel of 57 countries from 1979-89. The results suggest that

trade openness has a strong positive impact on economic growth. Similarly, Frankel and Romer (1999) using cross-country regressions conclude that trade has a quantitatively large, significant and robust positive effect on income. Dollar (1992) examines sources of growth in 95 developing countries during 1976-85 and finds a strong positive correlation between a measure of outward orientation and per capita GDP growth. Bhagwati and Srinivasan (2001) point out that practically no country that has been close to autarky has managed to sustain a high growth performance over a long period. The above examples provide strong evidence that greater trade openness is good for growth and poverty reduction over the longer term. It also suggests that there may be short term costs in terms of falling real wages of unskilled labour and or initially declining employment as greater competition drives out inefficient firms from business. Although these transition costs do not represent a credible case against trade openness, as the longer-term benefit would invariably offset these short-term costs, they need to be tackled through proper compensatory policies aimed at mitigating such costs.

2.1. Nature of Trade Liberalization in Bangladesh

Trade liberalization policies pursued by Bangladesh have passed through three phases. The first phase (1982-86) was undertaken as Bangladesh came under the purview of the policy based lending of the World Bank; the second phase (1987-91) began with the initiation of the three year IMF structural adjustment facility (SAF) in 1986; and finally, the third phase since 1992, was preceded by the IMF sponsored Enhanced Structural Adjustment Facility (ESAF) (BIDS, 2003). These reform measures led to a significant decline in quantitative restrictions, opening up of trade in many restricted items, rationalization and diminution of import tariffs, and liberalization of foreign exchange regime.

Table 1:Changes in Economic Indicators for Liberalization

Economic Indicators (In million US$)	Pre-Liberalization Period			Post-Liberalization Period			
	1976-80	1981-85	1986-90	1991-95	1996-00	2001-05	2006-10
GDP per capita	154.2	196.8	230	271.8	324	354.6	504
GDP at constant price	19,164	22,789	27,321	33,472	42,515	55,054	71,837
GDP Growth Rate (%)	4.4	4	4	4.4	5.2	5.2	6.2
Total population	85.6	97.8	110.8	123.2	135.8	148.2	160
Investment	1,747	3,040	4,264	5,686	9,155	13,615	20,089
Inflation (% change in CPI)	----	11.57	7.84	5.6	5	5.4	7.7
Trade % of GDP	18.4	16.4	18.4	22.6	31.4	36	45.2
Total Export	941.4	1,381	1,721	2,914	5,460	8,410	15,018
Total Import	2,191	3,321	3,845	4,783	8,166	10,383	17,435
Remittances	144.6	510	725	1,008	1,645	3,199	8,481
Current Account Balance	-411.8	-499	-526.6	-3.8	-396.4	-23.8	1319
FDI inflow	4.2	1	2.5	6	161	332	623
Real Exchange Rate	----	45	48	53	54	63	63
Real Interest Rate	6.4	1	7	10.4	10	11	8.2

Source: WDI, 2010

The economic indicator in table 1 clearly shows GDP per capita has been increasing since pre liberalization period and continuing to move at a faster rate up to now. Besides, FDI and remittances show high growth rate in the post liberalization period. Both exports and imports have

increased noticeably since liberalization, with imports rising faster than exports in the period immediately after liberalization.

However, the inflation rate fell with liberalization, possibly due to availability of cheaper imported goods, and demand management conditionality of the international financial institutions. Yet, by the period 2006-2010, the inflation rate had returned to its pre-liberalization levels. The growth rate of GDP in the post-liberalization period was significantly higher. The availability of imported intermediate and investment goods was a factor in the growth. The post-liberalization period showed a huge jump in FDI. These and other contributory factors lead to a higher GDP growth trajectory after liberalization.

3. METHODOLOGY

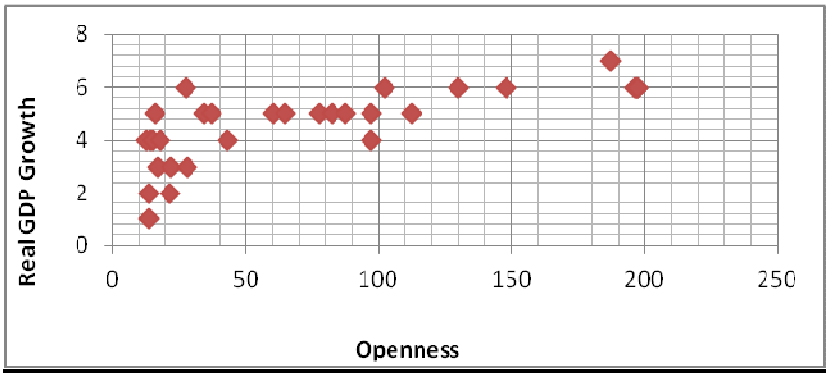
In previous section we have analyzed the impact of trade liberalization on growth descriptively for the developing countries and Bangladesh. In the subsequent section we model the effect of trade liberalization (in other words openness which is measured by export plus import divided by GDP) on growth, exports, imports and inflation for particularly Bangladesh Economy. We apply Ordinary Least Square (OLS) regression technique as the main methodology by using E- views 7 software and our data set comprises from 1980-2010. Most of the data are collected from World Development Indicators (WDI) 2010. We examine whether these models support the existing literatures of trade openness and growth.

4. RESULTS AND DISCUSSIONS

4.1. Openness and Growth

The relationship between openness and growth is a contentious one empirically. While many writers have found a positive relationship, there are those who have found no relationship or even a negative relationship (see Rodriguez and Rodrik, 1999 for a comprehensive survey). We investigate the relationship between openness and growth initially in Figure 1. The general picture that emerges is a positive relationship, albeit weak. Extremely high openness is seen to lead to higher growth. However, this relationship could be conditioned by other variables.

Figure 1: Real GDP Growth and Openness



In the regression model, we regress GDP growth (gY) by openness (lnOPEN), the growth rate of capital (gK), the growth rate of the labor force (gL) and a dummy variable for natural disasters

(DND). In Bangladesh, the economy is often adversely affected by floods and cyclones which affect output, especially agricultural output.

In estimating the regression, it became evident that the openness variable was endogenous. Hence, instrumental variable methods were used. Initially, we used foreign direct investment as a percent of GDP as the instrument. The correlation between these two variables was around 0.7 which is satisfactory for an instrument. Then, openness was regressed by foreign direct investment. The fitted values of openness were used as the instrument. The fitted values and actual values of openness were strongly correlated at 0.8.

The estimated regression is:

$$gY = -0.0029 + 0.0117(\ln OPEN)^* - 0.0371gK + 1.2537gL - 0.0076DND$$

(-0.6201) (6.5854) (-0.6219) (3.3804) (-3.1532)

$R^2 = 0.7261$, $\bar{R}^2 = 0.6439$, F = 8.8, D-W = 2.04,

where, $(\ln OPEN)^*$ is the instrument for lnOPEN.

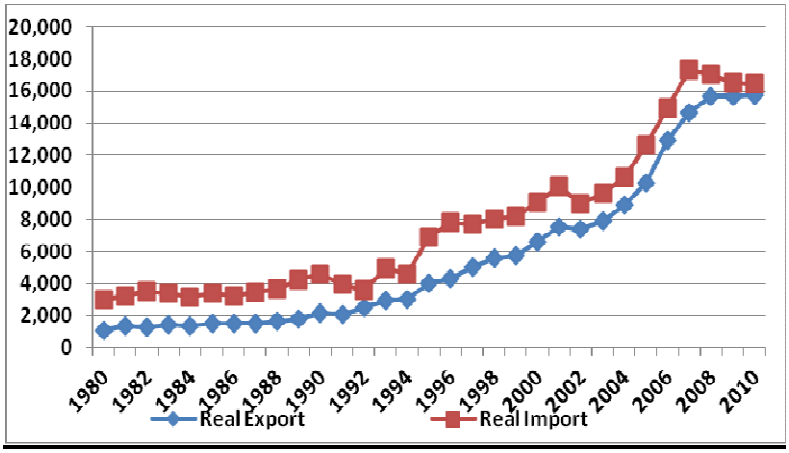
(t- Statistics are in parentheses)

The results confirm a positive and significant relationship between openness and growth. However, the effect of growth in capital on GDP growth turns out with a negative and statistically insignificant coefficient. This could either be due to errors in the capital stock series or capital also being endogenous. Since our primary interest is in the effect of openness, we did not pursue constructing an instrument for capital. The effect of the labor force growth is positive and significant. The natural disaster dummy is negative implying that such disasters affect growth adversely. The coefficient is statistically significant.

4.2. Openness, Exports and Imports

Figure 2 shows the behaviour of real exports and real imports in the period 1980 to 2010. Clearly, both series have increased over the period. This is very conspicuous from about 1993 coinciding with the period of trade liberalization.

Figure 2: Real Export and Real Import (in million USD)



Openness is expected to affect exports and imports of goods and services. Imports are expected to raise as the country increases its demand for foreign goods and inputs. The import demand for intermediate and investment goods rises. Similarly, greater openness is expected to increase exports as the country gets integrated in the world market and begins to produce for it. In order to test the above, we formulated two equations. In the first, real exports (ZX) are a function of openness (OPEN), world income (Y*), the terms of trade (TOT) and the real exchange rate (RER). All variables are in logarithms. We would expect a positive sign on the coefficients of OPEN and Y*, but a negative sign on TOT as increases in the relative price of exports will reduce demand for exports. We would also expect a positive coefficient on RER because real depreciation would increase real export.

The estimated equation is,

$$\ln ZX = 39.2309 + 0.7902 \ln OPEN - 0.6480 \ln Y^* - 0.7306 \ln TOT + 0.7730 \ln RER$$

(3.1845) (8.8130) (-1.15113) (-4.7704) (2.1533)

$R^2 = 0.9934$, $\bar{R}^2 = 0.9921$, D-W = 1.27, F = 886.2

The openness variable is statistically significant at 1% level of significance and is of the expected sign. The TOT variable is also significant at 1% level and of the expected sign. However, the world income variable is statistically insignificant and has the wrong sign. It is unlikely that a small exporter of goods like Bangladesh will have its exports affected by world income changes. This probably explains why the coefficient on the Y* variable is insignificant. The real exchange rate has the expected sign and is statistically significant.

For real imports (ZM), we assume that they are determined by openness (OPEN), domestic real income (Y), the terms of trade (TOT), and the real exchange rate (RER). The expectations are that openness and domestic real income will have positive coefficients, the terms of trade to have a positive coefficient and the real exchange rate to have a negative coefficient. The estimated regression is

$$\ln ZM = 20.7038 + 0.4742 \ln OPEN + 0.3062 \ln Y - 0.3371 \ln TOT - 0.6995 \ln RER$$

(2.7829) (3.1717) (0.5579) (-1.0071) (-1.3453)

$R^2 = 0.9704$, $\bar{R}^2 = 0.9655$, D-W = 1.63, F = 196.90

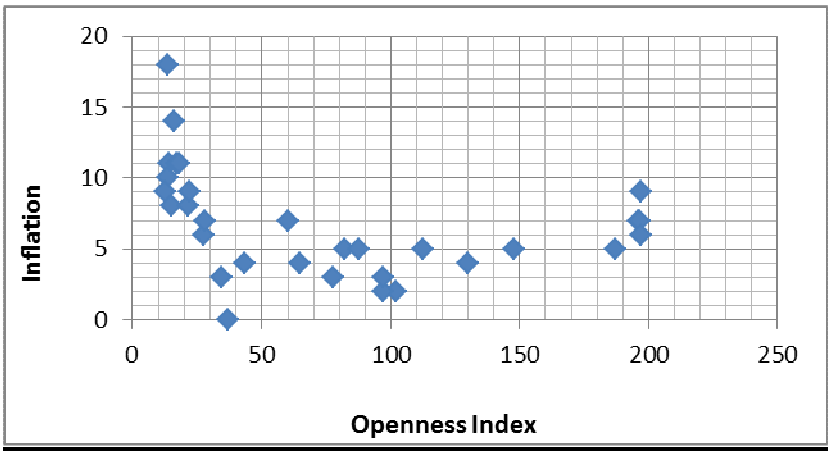
The regression confirms that when openness increases, real imports increase. The coefficient on the openness variable is both positive and statistically significant at 1% level. The coefficients on the real income variable of Bangladesh is positive as expected but not statistically significant. For a low income country like Bangladesh it is unlikely that increases in income lead to increase in imports. The terms of trade variable have an unexpected negative coefficient but it is statistically not significant. The real exchange rate variable has the correct sign but is statistically insignificant.

In summary, we see that both exports and imports increase with greater openness. This may seem obvious. However, greater openness can result from just an increase in imports (or exports) and therefore does not imply that both imports and exports increase.

4.3. Openness and Inflation

Figure 3 shows the relationship between openness and inflation (percentage change of the GDP deflator). It shows that low levels of openness have been identified with high rates of inflation. Between openness levels of about 50% to 150%, the rate of inflation is quite static, but beyond about 190%, the inflation rate increases markedly.

Figure 3: Inflation & Openness



As openness increases, the inflationary situation in a country could be reduced or increased. The higher imports to a country consequent to greater openness could reduce the price level in a country as the international price level is expected to be lower than domestic price level for a country like Bangladesh. On the other hand, increased imports could adversely affect the current account balance and consequently depreciate the value of the domestic currency. This could lead to inflation.

We assume that the inflation variable (YDEF) is the percentage change in the GDP deflator. It is dependent on the growth rate of real GDP (gY), the growth rate of the narrow money supply (gM1) and the logarithm of openness (lnOPEN).

The estimated equation is:

$$YDEF = -21.2322 - 98.200gY + 12.3494\ gM1 + 6.1997lnOPEN$$

$$(-0.7786) \quad (-1.9285) \quad (2.0451) \quad (1.3114)$$

$R^2 = 0.5738, \qquad \bar{R}^2 = 0.4997, \qquad D\text{-}W = 2.34, \qquad F = 7.74$

The openness variable is not statistically significant at conventional levels which mean that it possibly does not condition inflation in the country. Increases in output depress the price level, although it is not significant. The money supply exerts a positive and statistically significant (5%) effect on inflation.

The quantitative analysis undertaken in this section suggests that greater openness has had a favourable effect on economic growth. Both real export and imports have increased with greater openness. This is to be expected anyway. Finally, the effect of greater openness on the inflation rate is inconclusive. These results support to a great extent the conclusions of the literature

reviews in previous section. We believe that the econometric work in this section could have been improved by time series techniques. However, the small sample discouraged us from doing so.

5. CONCLUSION

The quantitative analysis undertaken in this study suggests that greater openness has a favourable effect on economic growth of Bangladesh. Both real export and imports have increased with greater openness. The effect of greater openness on the inflation rate is inconclusive. Hence, we conclude that liberalization policy certainly improves export of the country which eventually leads higher economic growth after 1990s. Hence, with the empirical evidence and policy suggestions the study tries to reveal the overall effect of trade liberalization on economic growth of Bangladesh. Finally, we believe this research can be a positive contribution of trade liberalization policy study in developing countries.

REFERENCES

Bangladesh Institute of Development Studies (BIDS) and Federation of Bangladesh Chambers of Commerce and Industry (FBCCI). (2003). *Recent performance of the Bangladesh economy: An assessment of the state of the economy and short-term outlook.* (Seminar Paper). Dhaka.

Bhagwati, J. and Srinivasan, T.N. (2001). Trade and poverty in the poor countries. *American Economic Review*. 92(2): 180–183. DOI: 10.1257/000282802320189212.

Dollar, D. (1992). Outward-oriented development economies really do grow more rapidly: Evidence from 95 LDCs, 1976-1985. *Economic Development and Cultural Change*. The University of Chicago Press, 40(3): 523-544.

Dollar, David and Kraay, A. (2001). Trade, growth, and poverty. *World Bank, Development Research Group*. Washington, D.C.

Frankel ,J. A. & Romer, D. (1999). Does trade cause growth? *The American Economic Review*. 89(3), 379-399.

Islam, S. (2001). The textile and clothing industry of Bangladesh in a changing world economy. Dhaka: *Centre for Policy Dialogue and the University Press Limited*

Krugman, P.R. (1990). *Rethinking International Trade.* Massachusetts: The MIT press

McCulloch, N., Alan, L., Winters, and Cirera, X. (2001). *Trade Liberalization and Poverty: A Handbook.* UK Department for International Development and the Centre for Economic Policy Research, London, pp. 405

Rodriguez, F. & Rodrik, D. (1999). Trade policy and economic growth: A skeptic's guide to cross-national evidence. *National Bureau of Economic Research, Inc* Working Papers-7081.

Rodrik, D. (1996). Understanding economic policy reform. *Journal of Economic Literature.* 34, 9-41.

Rodrik, D. (1997). *Has globalization gone too far?* Institute for International Economics, Washington D.C. ISBN: 0-88132-241-5

World Bank. (2010). *World Development Indicator and Global Development Finance 2010.* Washington, DC: World Bank.

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CASH HOLDING AND FIRM CHARACTERISTICS: EVIDENCE FROM NIGERIAN EMERGING MARKET

Lawrencia Olatunde Ogundipe[1], Sunday Emmanuel Ogundipe[1], Samuel Kehinde Ajao[1]

[1]Osun State College of Education, Department of Business Education, Nigeria.

KEYWORDS

Cash holding, firm characteristics, leverage, net working capital, Nigeria.

ABSTRACT

This paper aims at shedding light on the empirical relationship between cash holding and firm characteristics. A sample of 54 Nigerian firms listed on Nigerian Stock Exchange for a period of 15 years (from 1995-2010) was selected. This study applied co-relational research design. The results show that cash flow, net working capital, leverage, profitability and investment in capital expenditure significantly affect the corporate cash holdings in Nigeria. The study, therefore, contributes to the literature on the factors that determine the corporate cash holdings. The findings may be useful for the financial managers, investors, and financial management consultants.

1. INTRODUCTION

Empirical studies about the determinants of corporate cash holdings have occupied a central place in corporate finance literature. Cash holding, according to Gill and Shah (2012) is defined as cash in hand or readily available for investment in physical assets and to distribute to investors. Cash holding is therefore viewed as cash or cash equivalent that can be easily converted into cash. In this context, cash holding will include cash in hand and bank, short time investment in money market instrument such as treasury bills. Owing to the significance of cash and its importance in working capital management, different approaches are being used to determine factors that influence it. Holding cash is at a cost, which is the opportunity cost of the capital invested in liquid assets. The potential profit forgone on holding large cash balance is an opportunity cost to the firm. Adetifa (2005) observes that the costs of cash holding are of two categories: cost of excessive cash holding such as opportunity cost of interest foregone, costs of purchasing power among others and cost of inadequate cash holding including cost of corporate image, loss of cash discount on purchases and loss of business opportunities.

The corporate cash holding determinants have since been a subject of explanation in the framework of three theories, namely: the Trade-off Model, Pecking Order Theory and Free Cash Flow Theory. According to tradeoff theory, they set their optimal level of cash holding by weighing the marginal costs and marginal benefits of holding cash (Afza & Adnan, 2007). The main advantages associated with cash holding include reduction in the likelihood of financial distress, pursuance of the optimal investment policy even when financial constraints are met, and its contribution to minimize the costs of raising external funds or liquidating existing assets. According to Ferreira and Vilela (2004) the benefits of cash holding are: i) reduction in the likelihood of financial distress, ii) allowing the pursuance of investment policy when financial constraints are met, and iii) minimizing the costs of raising external funds or liquidating existing

assets.While marginal cost of holding cash is associated with the opportunity cost of the capital due to the low return on liquid assets.

As per the pecking order theory, Myers (1984) opines that firms finance investments firstly with retaining earnings, then with safe debt and risky debt, and finally with equity. When current operational cash flows are sufficient enough to finance new investments, firms repay debt and accumulate cash. When retained earnings are not enough to finance current investments, firms use the accumulated cash holdings and, if needed, issue debt while free cash flow theory as explained by Jensen (1986) that managers have an incentive to hoard cash to increase the amount of assets under their control and to gain discretionary power over the firm investment decision. With the cash holding, they do not need to raise external funds and could undertake investments that have a negative impact on shareholders' wealth.

The fallout of his submission has foreclosed the necessity of maintaining optimum cash holding. Pandey (2006) emphasizes that firm should maintain optimum cash holding. How to determine the optimum cash holding is a major concern for the financial manager globally, Nigeria inclusive. Efforts have been on to identify what are the determinants of cash holding bearing in mind the firm's characteristics such as size, growth opportunities, leverages, cash flow, dividend payout, Account receivable and payable among others. Hence, this study examines the correlation relationship between the cash as dependent variable and firms' characteristic as explanatory variables. The degree of determination will also be evaluated. Thus, this study will add substance to the existing theory developed by previous authors.

2. REVIEW OF RELEVANT THEORIES AND EMPIRICAL STUDIES

Several studies, undertaken on the developed economy market and recently, on emerging markets samples, tried to answer this question: Why do firms hold cash and what determines its volume using the theoretical models of the trade-off model? (Myers 1977), the pecking order model (Myers and Majluf 1984) and Free cash flow theory (Jensen 1986). By utilizing trade-off theory on the case of detention of cash, it was concluded that there is an optimal cash level which results from weighing its marginal benefits and costs. Cash holding generates costs and benefits and is very important in financing the growth opportunities of the firm. The important benefit of holding cash is that, it constitutes a safety buffer which permits firms to avoid the costs of raising external funds or liquidating existing assets and which allows firms to finance their growth opportunities. Insufficient cash forces firms to forgo profitable investment projects or to support abnormally high costs of financing. Two principal costs are associated with cash holding. These costs depend on whether managers maximize shareholders' wealth or not. If managers' decisions are in line with shareholders' interests, the only cost of cash holding is its lower return relative to other investments of the same risk. If managers don't maximize shareholders' wealth, they increase their cash holding to increase assets under their control and so to be able to increase their managerial discretion. In this case, the cost of cash holding will increase and include the agency cost of managerial discretion**.**

Pecking order theory (Myers and Majluf 1984) offers explanation on the determinants of cash, leading to the conclusion that there is optimal cash level. It is used as a buffer between retained earnings and investment needs. Under this theory, the cash level would just be the result of the financing and investment decisions. Issuing new equities is very costly for firms because of information asymmetries. Thus, firms finance their investments primarily with internal funds, then with debt and finally with equities. Thus, when operational cash flows are high, firms use them to finance new profitable projects, to repay debts, to pay dividends and finally to accumulate cash.

When retained earnings are insufficient to finance new investments, firms use their cash holdings, and then issue new debt.

The Free Cash Flow Theory (Jensen, 1986) explains that managers have an incentive to hoard cash to increase the amount of assets under their control and to gain discretionary power over the firm investment decision. With the cash holding, they do not need to raise external funds and could undertake investments that have a negative impact on shareholders' wealth. Thus, management may hold excess cash simply because it is risk averse. The possibility that management could be using cash for its own objectives raises the costs of outside funds, because outsiders do not know whether management is raising cash to increase firm value or to pursue its own objectives. Finally, management may accumulate cash because it does not want to make payouts to shareholders, and wants to keep funds within the firm. Having the cash, however, management must find ways to spend it, and hence chooses poor projects when good projects are not available (Opler, 1999).

Nadiri (1969) pioneered study on cash holdings by collecting data from US manufacturing sector from 1948 to 1964 to estimate a model relating to the desired level of real cash balances. The results showed that the demand for real cash balances is determined by output, the interest rate, the expected rate of change in general price level, and factor prices. Campbell and Brendsel (1977), extending the findings of Nadiri (1969), conducted an empirical study by collecting data from US manufacturing firms from 1953-1963 using Ordinary Least Square (OLS) regression analysis to examine the impact of compensating balance requirements on the cash holdings. and found that compensating balance requirements are not binding. Still on US, Opler *et al.* (1999) collected data in the 1971 to 1994 period from 1048 publicly traded US firms to find the determinants and implications of corporate cash holdings. Through time-series and cross-section tests, they found that firms with strong growth opportunities and riskier cash flows hold relatively high ratios of cash to total non-cash assets. Firms that have the greatest access to the capital markets tend to hold lower ratios of cash to total non-cash assets. Opler et al.(1999) also found that firms that do well tend to accumulate more cash.

Ferreira and Vilela (2004) investigated the determinants of corporate cash holdings using a sample of 400 firms in 12 Economic and Monetary Union (EMU) countries for the period of 1987-2000. Their results suggest that cash holdings are positively affected by the investment opportunity set and cash flows and negatively affected by asset's liquidity, leverage and size. Bank debt and cash holdings are negatively related, which supports that a close relationship with banks allows firm to hold less cash for precautionary reasons. In addition, firms in countries with superior investor protection and concentrated ownership hold less cash, supporting the role of managerial discretion agency costs in explaining cash levels. Ferreira and Vilela also found that capital markets development has a negative impact on cash levels, contrary to the agency view.

Nguyen (2005) investigated the hypothesis that cash balances have a precautionary motive and serve to mitigate the volatility of operating earnings. He collected a sample of 9,168 firm-year observations from Tokyo Stock Exchange for the period of 1992 to 2003. Through regression analysis, Nguyen found that cash holdings are positively associated with firm level risk, but negatively related to industrial risk. He also found that cash holding decreases with the firm's size and debt ratio, and increases with its profitability, growth prospects, and dividend payout ratio.

In New Zealand, Hofmann (2006) examined the determinants of corporate cash holdings of non-financial firms. His findings suggest that the main determinants of corporate cash holdings in New Zealand firms' growth opportunities, the variability of its cash flows, leverage, dividend payments, and the availability of liquid asset substitute. While growth opportunities and the variability of

cash flows are positively related to cash holdings, large dividend payments and liquid asset substitutes indicate lower cash holdings.

Saddour (2006) used regression analysis to investigate the determinants of the cash holdings by collecting data from 297 French firms over a period of (1998-2002) based on the trade-off theory and the Pecking Order Theory. He found that French firms increase their cash level when their activities are risky and the levels of their cash flow are high, and reduce it when they are highly leveraged. Growing companies hold higher cash levels than mature companies. For growing companies, there is a negative relationship between cash and the following firm's characteristics: size, level of liquid assets and short term debt. The cash level of mature companies increase with their size, their investment level, and the payout to their shareholders in the form of dividends or stock repurchases, and decreases with their trade credit and their expenses on research and development.

Afza and Adnan (2007) focused on determining the level of corporate cash holdings of non-financial Pakistani firms, across different firm sizes and different industries. They used dataset for a period of 1998 to 2005 for the firm size, growth opportunities, cash flow, net working capital, leverage, cash flow uncertainty, and dividend payments. They found negative relationships between market-to-book ratio, net working capital, leverage, dividends and cash holdings and positive relationships between firm size, cash flow, and cash holdings. Their findings show that firm size, cash flow, cash flow uncertainty, net working capital, and leverage significantly affect the cash holdings of non-financial firms in Pakistan.

Drobetz and Grüninger (2007) investigated the determinants of cash holdings for a comprehensive sample of 156 Swiss non-financial firms between 1995 and 2004. Through regression analysis, they found that, asset tangibility and firm size are both negatively related to corporate cash holdings. Dividend payments and operating cash flows are positively related to cash reserves. In addition, Drobetz and Grüninger found a positive relationship between i) CEO duality and corporate cash holdings, and ii) a non-significant relationship between board size and corporate cash holdings. That is, CEO duality leads to significantly higher cash holdings and larger board size has no impact on the corporate cash holdings.

Hardin III *et al.* (2009) used a sample of 1,114 firm-year observations for 194 equity real estate investment trusts (REITs) from USA over 1998 to 2006 period. Through Ordinary Least Square regression analysis, they found that REIT cash holdings are inversely related to funds from operations, leverage and internal advisement, and are directly related to the cost of external finance and growth opportunities. Cash holdings are also negatively associated with credit line access and use. The results imply that REIT managers prefer to hold little cash to reduce the agency problems of cash flow thereby increasing transparency and reducing the future cost of external capital.

Isshaq, Bokpin and Onumah, (2009) examine the interaction between corporate governance, ownership structure, cash holdings, and firm value on the Ghana Stock Exchange. Board size is found to be positively and statistically significantly related to share price among the corporate governance variables. However, a significant relationship between inside ownership and share price is not found. The results also indicate that additional units of cash holdings do not have a statistically significant influence on share price. Finally, leverage and income volatility are found to be significant determinants of share price.

Megginson and Wei (2010) studied the determinants of cash holdings and the value of cash in China's share-issue privatized firms from 1993 to 2007. Through regression analysis, they found that smaller, more profitable and high growth firms hold more cash. Debt and net working capital are negatively related to cash holdings, while cash holdings decline as state ownership increases.

Chen and Mahajan (2010) investigated corporate liquidity (cash holdings) in 15 European Union (EU) countries and 31 non-EU countries from 1994 to 2004. Their findings are three-fold. First, the introduction of the euro and the establishment of the Economic and Monetary Union(EMU) have reduced corporate liquidity in EU. Second, cash and debt are more substitutable in EU than non-EU countries in the transition to the monetary union. Lastly, corporate governance variables such as closely held shares, anti-director rights and creditor rights are important determinants of corporate liquidity and should be ignored in international corporate liquidity studies.

Kim *et al.* (2011) examined a panel data set obtained from 125 publicly traded US restaurant firms between 1997 and 2008 and found that restaurant firms with greater investment opportunities tend to hold more cash. At the same time, large restaurant firms, firms holding liquid assets other than cash, firms with higher capital expenditures, and firms paying dividends were shown to hold less cash. Kim *et al.* describe that both precautionary and transaction motives play important roles in explaining the determinants of cash holdings for restaurant firms.

Rizwan and Javed (2011) collected data from 300 Pakistani firms listed on Karachi Stock Exchange (KSE) over the period 1998 to 2007. Authors found that the cash holding of Pakistani firms increases with increase in cash flow and market-to-book ratio. They also found that net working capital and leverage are negatively related with corporate cash holdings of the Pakistani firms.

In summary, the literature review indicates that market-to-book ratio, cash flow to net asset ratio, net working capital to asset ratio, leverage, firm size, Return on Assets and investment determine corporate cash holdings as shown in the table below.

SUMMARY OF EMPIRICAL STUDIES BASED ON YEAR AND COUNTRIES

AUTHOR	YEAR	COUNTRIES	FINDINGS
Nadiri M. I	1969	USA	Determinants of real cash balance are output, interest rate and change in general price level.
Campbell T. and Brendell L.	1977	USA	Compensating balance requirement has no impact on cash holding.
Opler T., Pinkowitz L., Stulz R., and Williamson R.	1999	USA	The firms with strong growth opportunities and rising cash flow hold relative high cash to total asset (net of cash ratio and greater access to the capital market leads to lower ratio)
Hardin III W.G., Highfeild M.J., Hill M.D. and Kelly G.W.	2009	USA	Cash holdings are inversely related to funds from operations, leverage and internal advisement, and are directly related to the cost of external finance and growth opportunities. Cash holdings are also negatively associated with credit line access and use.
Kim, J., Kim, H. and Woods, D.	2011	USA	Firms with greater investment opportunities tend to hold more cash while firms holding liquid assets other than cash, higher capital expenditures and higher dividend pay-out hold less cash. Precautionary and transaction motives were found to be playing important roles in explaining the determinants of cash holdings for restaurant firms.
Ferreira, M.A., and Vilela, A.S.	2004	Economic and Monetary Union(EMU)	Cash holding has positive relationship with growth opportunities and cash flow and negatively related to liquidity, leverage, size, bank debt and capital market development.
Chen N. and Mahajan A.	2010	EMU	The introduction of the euro and the establishment of the Economic and Monetary Union(EMU) have reduced corporate liquidity in EU. Cash and debt are more substitutable in EU than non-EU countries in the transition to the monetary union. Corporate governance variables such as closely held shares, anti-director rights and creditor rights are important determinants of corporate liquidity and should be ignored in international corporate liquidity studies.

SUMMARY OF EMPIRICAL STUDIES BASED ON YEAR AND COUNTRIES

Nguyen P.	2005	Tokyo	Cash holding is positively associated with firm level but negatively related to industrial risk. Also, he found that cash holding decreases with firm size and debt ratio and increases with its profitability growth, prospect and dividend payout ratio.
Hofmann C.	2006	New Zealand	Determinants of corporate cash holdings in New Zealand are firms' growth opportunities, the variability of its cash flows, leverage, dividend payments, and the availability of liquid asset substitute. The growth opportunities and cash variability are positively related to cash holding while others are negatively related to cash holding
Saddour K.	2006	France	Cash holding level increases with riskier activities and growth opportunities but inversely related to leverage. For growing companies, there is a negative relationship between cash and size, level of liquid assets and short term debt while cash level of mature companies increase with their size, investment level and dividend payout to shareholders and decreases with their trade credit and their expenses on research and development.
Afza T. and Adnan S.M.	2007	Pakistan	Cash holding and Market-to-book ratio, net working capital, leverage, dividends are negatively related and positively related to firm size, cash flow, and cash holdings.
Rizwan M.F. and Javed T.	2011	Pakistan	Cash holding of Pakistani firms increases with increase in cash flow and market-to-book ratio but net working capital and leverage are negatively related with corporate cash holdings
Drobetz W. and Grüninger M.C.	2007	Switzerland	Asset tangibility and firm size are both negatively related to corporate cash holdings while dividend payments, operating cash flows and CEO duality are positively related to cash reserves
Isshaq Z.,and Bokpin G.A.,	2009	Ghana	There is no statistically significant influence of cash holding on share price while leverage and income volatility are found to be significant determinants of share price.
Megginson W.L. and Wei Z.	2010	China	Size, profitability and growth opportunities and state of ownership have positive influence on cash holding while debt and net working capital are negatively related to cash holding.

3. METHODOLOGY AND MODEL SPECIFICATION

The study applies co-relational and non-experimental research design. This study covers non-financial quoted companies in Nigeria. Sample of 54 companies was purposively selected. The sample of firms cut across fifteen (15) out of thirty-one (31) sectors of the Nigerian Stock Exchange classification. They are Automobile and Tyre, Breweries, Building Materials, Chemical and Paints, Computer and Office Equipment, Conglomerates, Construction, Food Beverages and Tobacco, Healthcare, Industrial/Domestic Products, Machinery, Packaging, Petroleum, Printing and Publishing, and Real Estate. The rationale for the exclusion of financial related quoted companies is due to the fact that their cash holding policies are exogenously determined by Central Bank of Nigeria. Also excluded were non-quoted companies because of non-disclosure of their financial reports and newly quoted companies that will result in missing data for the period being studied. Data for this study were obtained from the annual financial reports over a period of 1995 to 2009 from Nigerian Stock Exchange fact book and the headquarters of the sampled companies majorly in Lagos, Nigeria. Data collected were analyzed using Statistical Package for Statistical Scientists (SPSS 17.0). The model specification is built on the variables that are consistent with previous studies. The model and measurements of the independent and dependent variables are as follows:

$$CASH^*_{it} = \beta_0 + \beta_1 MTB_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 CF_{i,t} + \beta_4 NWC_{i,t} + \beta_5 LEV_{i,t} + \beta_6 ROA_{i,t} + \beta_7 INV_{i,t} + \varepsilon_{it}$$

Where,

CASH=Corporate cash holdings for firm i in time t. It is quotients of cash and cash equivalents to book value of assets less Cash and equivalents.

MTB = Market-To-Book ratio is taken as a proxy for the firm's investment opportunity set. This is taken as ratio Book value of assets less Book value of equity plus Market value of equity to Book value of assets

SIZE = taken as a proxy for the real size (SIZE) of firms. It is calculated as the natural logarithm of sales.

CF = Cash flow magnitude is measured by Cash flow to net assets ratio where cash flow is taken as ratio of pre-tax profits plus depreciation to total assets less cash and equivalents

NWC = Net working capital-to-assets ratio of net current assets less cash and cash equivalents to total assets less cash and equivalents.

Leverage (LEV) is measured as ratio of total debts to net Total assets

Return on Asset (ROA) is measured as ratio of operating profit to net total asset

Investment in fixed assets (INV) is measured as ratio of variation in investment on fixed asset to net total asset.

β_0 is the intercept

$\beta_1 - \beta_7$ are the independent variable coefficients

ε_{it} is the error term

4. EMPIRICAL RESULTS AND DISCUSSION

4.1. Descriptive Statistics

The descriptive statistics of the variables used in analysis are reported in Table 1. Descriptive statistics show the mean, median, minimum, maximum and standard deviation of the variables and provide a general overview of the characteristics of the data. Moreover, the relatively low standard deviations for most of the series indicate that the deviations of actual data from their mean values are very small. The statistics in table 1 equally show that the series are negatively skewed and leptokurtic (peaked) relative to the normal, except for growth opportunities (MTB) and firm size (SIZE). The mean of cash holding of all firms analyzed is 0. 07180, with the variation of individual data set varying from the mean of 1.476767. The distribution of cash also shows that it is negatively skewed. The independent variables denoted by MTB, SIZE, CF, NWC, LEV, ROA and INV have means value of -4.75672, 15.666, 0.9844, 0.01082, 0.1874, 0.63199 and 1.5976, respectively.

4.2. Correlation Analysis

Correlation explains how two variables react to each other e.g. what change will occur in one variable with the change in other variable. A correlation analysis was conducted to determine these relationships between the variables using Pearson Product-Moment correlation coefficient at the significance level of $p<.01$ and $p<0.05$. A "correlation coefficient" is a value that indicates whether there is a linear relationship between two variables. The absolute value of the correlation coefficient will be in the range 0 to 1.

The result in table 2 below shows positive and significant relationship between cash holding and CF, ROA and INV and negative but significant relationship with NWC. There is positive and significant relationship between CASH and CF (r=.639) at 1% significant level. The result supports that there is a strong relationship between cash flow and cash. The higher the cash flow from operation, the higher the cash holding of the firms. The theoretical proposition on the relationship between ROA and INV was upheld as these variables also show positive and significant relationship with the cash holding thus r=.176 and r=.264 at 1% significant level respectively. The analysis further shows that there is a negative and significant relationship between CASH and NWC (r=-212) at 1% significant level.

4.3. Regression

As part of diagnostic test, the multi-colinearity test was conducted. The co-linearity statistics is to ensure that there was no violation of the assumption underlying the use of regression analysis as regards the existence of multi-collinearity among the independent variables. The Tolerance statistic was high ranging between 0.832 and 0.969 which are well above 0.5 the acceptable standard and the Variance Inflation Factor (VIF) took value from 1.032 to 1.202, the values are lower than 2. This is within the acceptable range, hence it indicates that there were no multi-collinearity problems among the independent variables in the data

Another diagnostic test carried out to find out the auto-correlation in the residuals was Durbin-Watson. The value 1.961 implying that in this model that there exists no auto-correlation in the residual. Multiple regression analysis helps us to understand how much on the variance in the dependent variable is explained by a set of predictors. Therefore, the regression analysis was conducted to determine the contribution of the independent variables to the variance in the

dependent variable. The R square value indicated that 50.1% of the variance in cash was explained by the contributions of independent variables (refer to table 3). The value of F test explains the overall significance of a model. It explains the significance of the relationship between dependent variables and all the other independent variables. The F-statistic is also significant at F= 97.28 p<0.000)

The value of beta explains the change in the dependent variable with the per unit change in independent variable. It also explains the nature and strength of the relationship between dependent variable and independent variable.Using OLS regression the β value of cash flow gives the highest value of .616 and leverage with lowest value of 0.053. Therefore as shown in table 3 below, there is a significant positive impact of CF, LEV, ROA and INV and negative impact of NWC on the CASH except for the MTB and SIZE that have insignificant positive impact on CASH. The analysis of variance (ANOVA) tests are also significant at 0.000.

5. DISCUSSION

The result showing a positive relationship between cash and cash flow is in line with the findings of Ferreira and Vilela (2004), Afza and Adnan (2007) and Alam *et al.* (2011). This indicates that firms with large cash flows will keep higher cash levels.

The finding of a positive relationship between cash holding and leverage is in accordance with agency theory that highly leveraged firms find it difficult and expensive to raise additional funds nor renegotiate existing debts hence, hold larger cash and induce a positive relationship. This is in variance with the findings of Ferreira and Vilela (2004) that cash and leverage are negatively related.

The trade-off theory predicts a negative relationship between return on assets and cash holdings (Kim et al., 1998; Ozkan and Ozkan, 2002 and Bates et al. 2009). The pecking order theory, on the other hand, predicts the opposite (Almeida et al. 2004). The finding of the paper supports the pecking order theory of positive relationship between ROA and cash holding.

Afza and Adnan (2007), Megginson and Wei (2010) and Alam *et al.* (2011) who found a negative relationships between net working capital and cash holdings. The position supported by this findings.

Growth opportunities represented by MTB and firm SIZE are insignificant as cash holding determinants in Nigeria. This is contrary to Nguyen (2005), Saddour (2006) and Afza and Adnan (2007) findings that MTB and SIZE were significant in determining corporate cash holding.

6. CONCLUSION

For the past half century, the topic on cash holding has attracted intense debate in the financial management arena. The basic question always raised is; Why do firms hold cash? what factors determine a firm's optimal cash holding? While, most of the literature seeks the nature of relations between the cash holding and the firm's specific characteristics in both Developed Economies and Developing Countries, Nigerian economy is the focus of this paper.

In conclusion, the results are almost consistent with previous study except for the findings of insignificant relation between growth opportunities and size and cash holding in Nigeria which

contradict the previous findings in other countries. Thus, the present findings represent unique characteristics of Nigerian firms' cash holding.

REFERENCES

Adetifa S.B (2005). *Corporate Finance and Investment Strategy*. Lagos, The Chartered Institute of Bankers of Nigeria 1st edition

Afza, T., & Adnan, S.M. (2007). Determinants of corporate cash holdings: A case study of Pakistan. Proceedings of Singapore Economic Review Conference (SERC) 2007, August 01-04, Organized by Singapore Economics Review and The University of Manchester (Brooks World Poverty Institute), Singapore 164-165. [Online] Available: [https://editorialexpress.com/cgi-bin/conference/download.cgi?db_name=SERC2007&paper_id=166], (October 20, 2011)

Alam H.M., Ali, L., Rehman C.A. and Akram M, (2011). "The impact of working capital management on profitability and market valuation of Pakistani firms": *European Journal of Economics, Finance & Administrative Sciences,* vol. 32, 2011. viewed on 17 October, 2011, <*http://www.eurojournals.com*>

Almeida, H.; Campello, M. and Weisbach, M. (2004): "The Cash flow Sensitivity of cash," *Journal of Finance* 59(4), 1777–1804.

Bates, T., Kahle, K. and Stulz R. (2009). Why Do U.S. Firms Hold So Much More Cash than They Used To?. *The Journal of Finance*. LXIV(5), October. www.cob.ohio-state.edu/fin/faculty/stulz/.../jofi_1492.pdf

Campbell, T. and Brendsel, L. (1977). The impact of compensating BalanceRequirements on the Cash Balances of Manufacturing Corporations: An Empirical Study. *The Journal of Finance,* 32, 31-40

Chen, N., and Mahajan. A.(2010): Effects of Macroeconomic Conditions on Corporate Liquidity International Evidence *International Research Journal of Finance and Economics*. ISSN 1450-2887, Issue35. http://www.eurojournals.com/finance.htm

Dittmar, A., Mahrt-Smith, J., & Servaes, H. (2003). International corporate governance and corporate cash holdings. *Journal of Financial and Quantitative Analysis*, 38(1), 111-133, http://dx.doi.org/10.2307/4126766.

Drobetz, W., & Grüninger, M.C. (2007). Corporate cash holdings: Evidence from Switzerland. *Financial markets Portfolio,* 21, 293–324, http://dx.doi.org/10.1007/s11408-007-0052-8.

Ferreira, M.A., & Vilela, A.S. (2004). Why do firms hold cash? Evidence from EMU countries. *European Financial Management,* 10(2), 295-319, http://dx.doi.org/10.1111/j.1354-7798.2004.00251.x.

Gill. A and Shah, C (2012): Determinants of Corporate Cash Holdings: Evidence from Canada International Journal of Economics and Finance, 4(1); www.ccsenet.org/ijef

Hardin III, W.G., Highfield, M.J., Hill, M.D., & Kelly, G.W. (2009). The determinants of REIT cash holdings. *Journal of Real Estate Finance and Economics,* 39(1), 39-57, http://dx.doi.org/10.1007/s11146-007-9103-1.

Harford, J. (1999). Corporate cash reserves and acquisitions. *Journal of Finance,* 54(6), 1969-1997, http://dx.doi.org/10.1111/0022-1082.00179

Hofmann, C. (2006): "Why New Zealand Companies hold cash: An empirical Analysis" Unpublished Thesis

Isshaq, Z., & Bokpin, G.A. (2009). Corporate liquidity management of listed firms in Ghana. Asia - P*acific Journal of Business Administration*, 1(2), 189-198, http://dx.doi.org/10.1108/17574320910989122.

Jensen, M. (1986). Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review*, 76, 323-329.

Kim, J., Kim, H., & Woods, D. (2011). Determinants of corporate cash-holding levels: An empirical examination of the restaurant industry. *International Journal of Hospitality management,* 30(3), 568-574, http://dx.doi.org/10.1016/j.ijhm.2010.10.004.

Megginson, W.L., & Wei, Z. (2010). Determinants and value of cash holdings: Evidence from China's privatized firms. SSRN Working Paper Series, 1-37.

Myers, S. (1984). The capital structure puzzle. *Journal of Finance,* 39, 572-592, http://dx.doi.org/10.2307/2327916.

Nadiri, M.I. (1969). The determinants of real cash balances in the U.S. total manufacturing sector. The Quarterly *Journal of Economics,* 83(2), 173-196, http://dx.doi.org/10.2307/1883079.

Nguyen, P. (2005). How sensitive are Japanese firms to earnings risk? Evidence from cash holdings. 1-41. [Online] Available: http://www.musashi.jp/~togo/Seminar/Sensitivity_earnings_riskNguyen.pdf

Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate cash holdings. *Journal of financial economics,* 52(1), 3-46, http://dx.doi.org/10.1016/S0304-405X(99)00003-3.

Ozkan, A. and N. Ozkan (2004). Corporate Cash Holdings: An Empirical Investigation of UK Companies. *Journal of Banking and Finance*, 28, 2103–2134

Pandey, I.M. (2006): *Financial Management*. New Delhi Vikas publishing house PVT Ltd 9th Edition

Rizwan, M.F., & Javed, T. (2011). Determinants of corporate cash holdings: Evidence from Pakistani public sector. *Economics, Management and Financial Markets*, 6(1), 344-358.

Saddour, K. (2006). The determinants and the value of cash holdings: Evidence from French firms. CEREG, 1-33. [Online] Available: http://www.dauphine.fr/cereg/cahiers_rech/cereg200606.pdf

Appendix

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
CASH	693	-37.044	4.044	.07180	1.476767	-23.072	579.471
MTB	692	-641.840	1.250	-4.75672	44.591977	-8.878	89.627
SIZE	689	9.578	23.197	15.66632	2.575679	.392	-.396
CF	693	-45.538	42.307	.09844	2.852608	-1.103	186.296
NWC	693	-37.792	9.516	.01082	1.752481	-15.286	323.813
LEV	693	-39.558	5.931	.18738	1.556208	-24.007	617.621
ROA	693	-30.324	397.690	.63199	15.175752	25.940	680.103
INV	692	-196.764	461.394	1.59760	26.915187	13.339	219.806

Table 2: Correlations

		CASH	MTB	SIZE	CF	NWC	LEV	ROA	INV
CASH	Pearson Correlation	1	-.002	-.007	.639**	-.212**	.048	.176**	.264**
	Sig. (2-tailed)		.965	.859	.000	.000	.211	.000	.000
MTB	Pearson Correlation	-.002	1	.214**	-.066	-.009	.028	.004	.007
	Sig. (2-tailed)	.965		.000	.085	.814	.457	.908	.852
SIZE	Pearson Correlation	-.007	.214**	1	-.021	.008	-.032	-.031	-.056
	Sig. (2-tailed)	.859	.000		.578	.834	.409	.417	.140
CF	Pearson Correlation	.639**	-.066	-.021	1	-.043	.326**	.091*	.146**
	Sig. (2-tailed)	.000	.085	.578		.258	.000	.016	.000
NWC	Pearson Correlation	-.212**	-.009	.008	-.043	1	.233**	-.088*	-.079*
	Sig. (2-tailed)	.000	.814	.834	.258		.000	.021	.038
LEV	Pearson Correlation	.048	.028	-.032	.326**	.233**	1	.074	-.063
	Sig. (2-tailed)	.211	.457	.409	.000	.000		.050	.096
ROA	Pearson Correlation	.176**	.004	-.031	.091*	-.088*	.074	1	.015
	Sig. (2-tailed)	.000	.908	.417	.016	.021	.050		.690
INV	Pearson Correlation	.264**	.007	-.056	.146**	-.079*	-.063	.015	1
	Sig. (2-tailed)	.000	.852	.140	.000	.038	.096	.690	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 3: The Effect of Firm Characteristics on the Cash Holding Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	-.106	.257		-.414	.679		
	MTB	.001	.001	.033	1.177	.240	.948	1.055
	SIZE	.004	.016	.008	.278	.781	.949	1.053
	CF	.337	.015	.616	22.058	.000	.944	1.060
	NWC	-.110	.024	-.127	-4.611	.000	.969	1.032
	LEV	.211	.110	.053	1.927	.054	.988	1.012
	ROA	.010	.003	.107	3.914	.000	.978	1.022
	INV	.008	.002	.145	5.257	.000	.962	1.039

a. Dependent Variable: CASH

Model Summary[b]

Model	R	R^2	Adjusted R^2	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R^2	F Change	df1	df2	Sig. F Change	
1	.708[a]	.501	.496	1.053632	.501	97.280	7	677	.000	1.961

a. Predictors: (Constant), INV, MTB, ROA, LEV, NWC, SIZE, CF

b. Dependent Variable: CASH

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	755.958	7	107.994	97.280	.000[a]
	Residual	751.565	677	1.110		
	Total	1507.524	684			

a. Predictors: (Constant), INV, MTB, STO, NWC, SIZE, ROA, CF, LEV

b. Dependent Variable: CASH

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MERGER MOTIVES, TRENDS AND POST MERGER PERFORMANCE: EVIDENCE FROM ELECTRICITY COMPANIES IN INDIA

N.M.Leepsa

Indian Institute of Technology Kharagpur, Vinod Gupta School of Management, India.

KEYWORDS

Electricity, mergers and acquisitions, merger motives, post merger performance.

ABSTRACT

Mergers and acquisitions (M&A) in India are the outcome of globalisation and liberalisation. The factors that have triggered the volume of M&A are various economic factors like competitive environment, growth in gross domestic product, higher interest rates and fiscal policies. Mergers and acquisitions have gained significance in corporate world as an important growth strategy for both acquirer and target companies. M&A have mushroomed in almost all sectors like manufacturing, mining, construction sector, financial services, and services other than financial. M&A has also played an active role in electricity sector in India. In this paper we explore the current scenario of M&A in Electricity sector and the factors driving the M&A. In particular, we investigated related and unrelated M&A deals, Public & Private companies gone for deal, year wise deals, and group affiliation deals in electricity sector. We also focused on regulatory aspect of M&A in electricity sector. The period of study is from 1st January 1990 to 31st December 2011. Our finding suggest that M&A in electricity is highly regulated and thus deals are made to survive in this regulated environment even though much deals are not done if compared to other sectors.

1. INTRODUCTION

Mergers[1] and acquisitions (M&A) in India are the outcome of globalisation and liberalisation. The factors that have triggered the volume of M&A are various economic factors like competitive environment, growth in gross domestic product, higher interest rates and fiscal policies. Mergers and acquisitions have gained significance in corporate world as an important growth strategy for both acquirer and target companies. M&A have mushroomed in almost all sectors like manufacturing, mining, construction sector, financial services, and services other than financial.

Before the year 1990, companies in the electricity sector enjoyed monopoly where government performed various functions like generation, transmission, distribution and commercial trading. But there was significant change in the scenario after the economic reforms in 1991 because of privatisation and deregulation electricity sector. These changes lead to distribution of various functions like generation, transmission, distribution and trading to separate entities and privatisation in distribution function. Hence, electricity companies were given importance due to the presence of both private and government bodies in the electricity sector. There were many

[1] Merger is a term used to refer when two corporations join together into one, with one corporation surviving and the other corporation disappearing. The assets and liabilities of the disappearing entity are absorbed into the surviving entity (Source: http://www.incorporating-online.org/Definition-merger.html)

problems associated with the electricity sector before 1990 like huge technical and commercial losses due to unprofessionally managed companies; problems of cross subsidisation; and inadequate distribution channels that lead to poor quality of supply of electricity. These problems were hurdles for ensuring financial feasibility, rationalisation of tariffs and facilitation of private investment in attaining policy objectives. Thus, there was always a need for efficiency, economy, and competition in electricity sector in India. M&A has also played an active role to facilitate the mobilisation of resources in electricity sector in India.

2. METHODOLOGY AND DATA

The current research is carried out in the following way:

2.1. Sample Description

Data have been collected from Centre for Monitoring Indian Economy (CMIE) Prowess database. For the study data have been collected for M&A involved companies only in electricity sector. M&A deals in other sectors like manufacturing, mining, financial services are chosen. There were 451 companies in electricity sector. It was found that 347 electricity companies are there with no M&A or other forms of business combinations from 1st January 1980 to 30th November 2011 as they are totally following organic growth strategy for their company. While around 104 companies in electricity either go for mergers or acquisitions of other business combinations[2].

The data have been collected from 1st January 1990 to 31st December 2011. Around 18 electricity companies made merger deals as acquirer (merging with another company) and around 29 electricity companies merger made deals as target (merged into another company), it means 47 companies went for merger deals Out of 40 acquirer companies, 34 companies are found in prowess, and out of that 34 acquirer companies, 18 companies are from electricity. Out of the 40 target companies, 33 companies found in prowess, and from the 33 targets, 29 are from electricity sector. Out of 67 companies available in prowess actually gone for M&A either as target or as acquirer in merger deals (47 companies are from electricity sector, 18 as acquirer & 29 as target). Some of the deals are made by acquirers which are with no names of companies (unknown companies); these were excluded from the sample. So, the final sample is 32 deals i.e. companies where either acquirer or target with data availability.

The sample acquirers are in main product/service group like thermal electricity, coal based thermal electricity, wind energy, electricity energy, and hydro electricity. The targets are in the main product/service group like electricity energy, power transmission line services, wind energy, oil-based-thermal electricity, thermal electricity, electricity and non-conventional energy, and hydro electricity.

[2] Business Combinations definition: Here we have taken the definitions as in prowess database. The business combinations means, companies acquiring assets, selling assets, merging with another company, being merged into another company, minority acquisition of shares, substantial acquisition of shares

Table 1: Sample M&A Deals for Performance Evaluation

Acquirer	Date	Target Company
Tata Power Co. Ltd.	9-Jun-00	Andhra Valley Power Supply Co. Ltd. [Merged]
Reliance Infrastructure Ltd.	25-Jul-03	B S E S Andhra Power Ltd. [Merged]
C E S C Ltd.	11-Feb-04	Balagarh Power Co. Ltd.
Torrent Power Ltd.	23-Mar-06	Torrent Power A E C Ltd. [Merged]
Torrent Power Ltd.	23-Mar-06	Torrent Power S E C Ltd. [Merged]
Bhilai Electric Supply Co. Pvt. Ltd.	2-Aug-06	N T P C-S A I L Power Co. Pvt. Ltd.
Jaiprakash Power Ventures Ltd.	25-Jun-09	Jaiprakash Power Ventures Ltd. [Merged]
J S W Energy Ltd.	23-Jul-10	J S W Energy (Ratnagiri) Ltd. [Merged]
Source: CMIE Prowess Database		

These samples are chosen based on the following criteria:

- Initially merger deals are collected where either acquirer or Target Company is from electricity industry. To make the performance comparable and better results both the acquirer and the target firms are taken from electricity industry.
- The companies have continuous financial data for the pre and post merger first, second and third years
- The deals are completed
- The sample companies are chosen from the merger deals done during 1st January 2000 to 31st March 2010 so that at least data for one year pre and post merger are available.

Initially there were 34 deals found where either the target or acquirer company made merger deal in electricity industry. Then from them 26 companies were found as the target electricity companies and eight as acquirer. The final sample deals were eight selected for performance evaluation.

3. REGULATORY OR LEGAL ISSUES

Electricity companies are highly regulated and M&A particularly in this sector are highly regulated. In other words, they were the main players in the channel from production through distribution to final consumers. Besides, as already discussed these monopolies were enjoyed by the state owned companies. The functions like transmission and distribution are involved in high capital intensive segments so that substantial investment can be maintained and network infrastructures and power plants can be build which can meet the electricity needs of consumers. Since the period of investment is long there is need of continuous planning and monitoring. Thus there is state intervention in this sector for security of supply and the complexity of this commodity. Furthermore, some specific features of electricity, such as non-storability and the continuous balance between demand and supply, supported intervention of government. This situation led to the lack of economic incentives for efficiency; direct and indirect state subsidies had been the rule to maintain a stable industry. Since the role of electricity sector is significant for the economic development for all other sectors, it is highly regulated.

To discuss the regulatory aspect it is first necessary to understand the nature of electricity sector that differentiates it from other network industries. The characteristics of the industries is important to know as it will help to know the nature of regulation and competition policy in the sector and the problems involved in achieving the goals of the liberalisation process. It is also important to know the features of electricity as a commodity. Firstly, for consumers electricity is a homogenous product. It does not have any particular feature or quality that differentiates it. Secondly, production costs are heterogeneous depending on the technology and the energy sources used. Thirdly, demand is highly inelastic and there are no substitutes for it. This means that changes in prices have little influence on consumption. Fourthly, unlike gas, electricity is a non-storable commodity. It is not possible to produce more during normal periods in order to cover peak demand periods. It is necessary instead to balance demand and supply at every single point in time. Fifthly, the transmission (high voltage) and distribution (medium, low voltage) of electricity depend on the distance, but also on the resistance in the transmission network. For these reasons, in the case of congested network infrastructures, it is possible that inefficient generators located in a specific place could provide electricity more cheaply than efficient generators in other locations.

The Electricity Act, 2003 is currently regulating the electricity sector in India with some amendments in 2007 and 2008. This is an Act to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalisation of electricity tariff, ensuring transparent policies regarding subsidies, promotion of efficient and environmentally benign policies, constitution of Central Electricity Authority, Regulatory Commissions and establishment of Appellate Tribunal and for matters connected therewith or incidental thereto. A transfer scheme under this section may- (a) provide for the formation of subsidiaries, joint venture companies or other schemes of division, amalgamation, merger, reconstruction or arrangements which shall promote the profitability and viability of the resulting entity, ensure economic efficiency, encourage competition and protect consumer interests; (b) define the property, interest in property, rights and liabilities to be allocated - (i) by specifying or describing the property, rights and liabilities in question; or (ii) by referring to all the property, interest in property, rights and liabilities comprised in a described part of the transferor's undertaking; or (iii) partly in one way and partly in the other; (c) provide that any rights or liabilities stipulated or described in the scheme shall be enforceable by or against the transferor or the transferee; (d) impose on the transferor an obligation to enter into such written agreements with or execute such other instruments in favour of any other subsequent transferee as may be stipulated in the scheme; (e) mention the functions and duties of the transferee; (f) make such supplemental, incidental and consequential provisions as the transferor considers appropriate including provision stipulating the order as taking effect; and (g) provide that the transfer shall be provisional for a stipulated period. (6) All debts and obligations incurred, all contracts entered into and all matters and things engaged to be done by the Board, with the Board or for the Board, or the State Transmission Utility or generating company or transmission licensee or distribution licensee, before a transfer scheme becomes effective shall, to the extent specified in the relevant transfer scheme, be deemed to have been incurred, entered into or done by the Board, with the Board or for the State Government or the transferee and all suits or other legal proceedings instituted by or against the Board or transferor, as the case may be, may be continued or instituted by or against the State Government or concerned transferee, as the case may be. (7) The Board shall cease to be charged with and shall not perform the functions and duties with regard to transfers made on and after the effective date. Explanation.- For the purpose of this Part, -(a) "Government company" means a Government Company formed and registered under the Companies Act, 1956. (b) "Company" means a

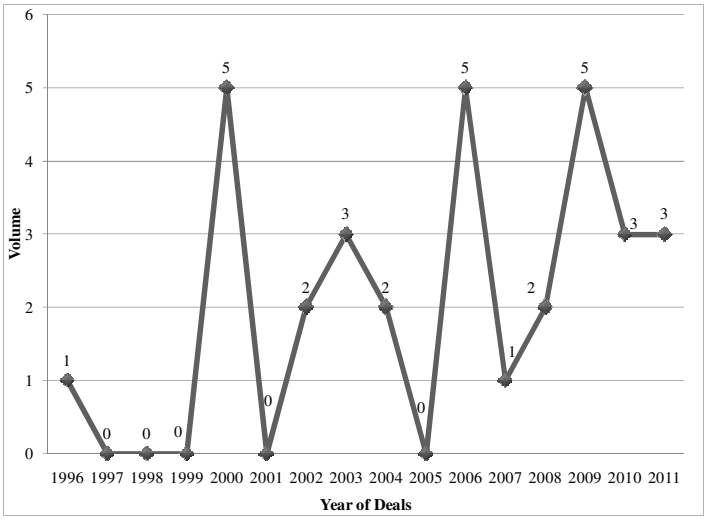
company to be formed and registered under the Companies Act, 1956 to undertake generation or transmission or distribution in accordance with the scheme under this Part.

As regards M&A transactions in the energy sector, some of the most relevant risks to be identified by the buyer normally relate to regulatory issues (e.g. sale and tariff of electricity), the survival to the transfer of shares of all permits, licences, concessions and authorisations held by the company, agreements with the grid operator, liabilities on environmental matters (e.g. contamination of the site) as well as liabilities on taxes, accounting, labour, health and safety, pending litigation, judicial and/or extrajudicial (Marcenaro, E)

4. M&A IN ELECTRICITY: THE CURRENT TREND

M&A in electricity sector is gradually increasing by year to year. There are various factors that are driving these deals. There has been increase in number of mergers and acquisitions as companies go face high electricity prices, regulatory uncertainties. Companies in electricity sectors were enjoying their monopoly over the line of production (generation and distribution). For couple of years especially before 2000, the merger deals in electricity sector was very rare. The scenario has taken new turn after year 2000 when there was less regulatory environment, change in economic environment, better government policies and motivated corporate people going for new investment trends like mergers and acquisitions. Mostly acquirers merged with their subsidiary companies.

Figure 1: Merger Deals in Electricity Sector in India from 1996-2011



Source: CMIE Prowess Database

Even though an attempt has been to look into M&A from 90's in electricity sector, but the real merger activities started after 2000. Only one merger deal is found during 90s which is done between Nava Bharat Ventures Ltd. with Nav Chrome Ltd. [Merged] on 3rd March 1996. In 2000, 2006, 2009 have highest record of deals in electricity sector which is 16 per cent of total each, in 2003, 2010, 2011 had each 6 per cent of merger deals and 1996, 2007 each had 3 per cent out of total merger deals. In the years 1997, 1998, 1999, 2001, 2005 there no merger deals made. During the 90's the merger deals were not made because of highly regulated environment. During the year

2000 for the first time, the companies in electricity sector went for merger between the firms and they were anti-competitive and made their presence in M&A market.

The companies involved in merger in electricity sector mostly are public limited companies. Among the acquirer there is only one private limited company named Bhilai Electric Supply Co. Pvt. Ltd. that merged with NTPC-SAIL Power Co. Pvt. Ltd. among the target there are two private limited companies named L&T Power Investments. Pvt. Ltd. [Merged] and NTPC-SAIL Power Co. Pvt. Ltd. There were more number of public limited companies than the private companies which signifies that there is less reform in many segments in this electricity sector and lack of private people implies lack of competition which may have lead to lack of good performance record in this sector.

Mostly the companies belong to the industry group electricity generation than the electricity distribution. Some of the target and target companies gone for deals other than the companies in same industry like Ferro alloys, tyres & tubes, coal & lignite, polymers, trading, fund based financial services, pig iron, steel, cement, sugar, trading, business consultancy. These acquirer and target companies involved in electricity generation and distribution have gone of deals in different industries may be to take the benefit of diversified business strategy or benefit of unrelated deals like diversification of loss.

Most of the acquirer and target companies are owned by the business groups apart from Central Government Commercial Enterprises, Private (Indian), State and Private Sector, State Government- Commercial Enterprises. The ownership groups are Elgi Group, IndiaBulls Group, Jaiprakash Group, Kalyani (Bharat Forge) Group, Kirloskar Group, Larsen & Toubro Group, Modi Umesh Kumar, Monnet Group, Nava Bharat Group, NCL Group, Om Prakash Jindal Group, Reliance Group [Anil Ambani], RPG Enterprises Group, S. Kumars Group, T G Venkatesh Group, Tata Group, Torrent Group, VBC Group, Vedanta Group, Weizmann Group. Majority of deals are done by Jaiprakash Group and Tata Group.

The related deals (Deals where acquirer and target were in Electricity Generation) occurred between the following companies:

Table 2: Deals where Acquirer and Target were in Electricity Generation

Merger Date	Acquirer	Target
9-Jun-00	Tata Power Co. Ltd.	Andhra Valley Power Supply Co. Ltd. [Merged]
9-Jun-00	Tata Power Co. Ltd.	Tata Hydro-Electric Power Supply Co. Ltd. [Merged]
7-Dec-00	Tata Power Co. Ltd.	Jamshedpur Power Co. Ltd. [Merged]
25-Jul-03	Reliance Infrastructure Ltd.	B S E S Andhra Power Ltd. [Merged]
23-Mar-06	Torrent Power Ltd.	Torrent Power A E C Ltd. [Merged]
23-Mar-06	Torrent Power Ltd.	Torrent Power S E C Ltd. [Merged]
2-Aug-06	Bhilai Electric Supply Co. Pvt. Ltd.	N T P C-S A I L Power Co. Pvt. Ltd.
3-Dec-08	Indiabulls Power Ltd.	Indiabulls Power Services Ltd. [Merged]
25-Jun-09	Jaiprakash Power Ventures Ltd.	Jaiprakash Power Ventures Ltd. [Merged]
23-Jul-10	J S W Energy Ltd.	J S W Energy (Ratnagiri) Ltd. [Merged]
14-Feb-11	Jaiprakash Power Ventures Ltd.	Bina Power Supply Co. Ltd. [Merged]
14-Feb-11	Jaiprakash Power Ventures Ltd.	Jaypee Karcham Hydro Corporation. Ltd. [Merged]
Source: CMIE Prowess Database		

The number of related deals is 12 and unrelated deals are 45 over the sample period. Most of the related deals are done in year 2000 and year 2006. In year 2000, Tata made mergers to bring the group's power companies under one umbrella with a combined turnover of about Rs 3,000 crore. The deal was made to get relaxation in stamp-duty norms by the state government. It was considered year 2000 is good time to go for the deal as the stamp-duty norms are no longer as rigid as it was in past. Again it was believed that existing shortages and demand growth in the western grid will be able to absorb the new capacities planned by the company. In 2006, TEL merged with Torrent Power AEC, Torrent Power SEC and Torrent Power Generation. The merger turned them into first rate power utilities in terms of operational efficiencies and reliability of power supply. Torrent has a generation capacity of 1600 MW and distributes electricity to Ahmadabad, Gandhinagar and Surat. The related deal helped the company for making outstanding performance in power distribution by the Government of India. In 2011, two deals were made by Jaiprakash Power Ventures Ltd. Currently, Jaiprakash Associates owns 63 per cent stake in JHPL. Post merger, its stake is expected to go beyond 80 per cent (depending upon the valuation). JHPL, which generates 300 Mw power in Himachal Pradesh, has a market capitalisation of Rs 4,250 crore.

The deals done between cash and stock are discussed below:

Table 3: Companies Involved in Cash Deals

Merger Date	Acquirer Company	Target Company
7-Dec-00	Tata Power Co. Ltd.	Jamshedpur Power Co. Ltd. [Merged]
22-Mar-02	C E S C Ltd.	Cescon Ltd.
25-Jul-03	Reliance Infrastructure Ltd.	B S E S Andhra Power Ltd. [Merged]
11-Feb-04	C E S C Ltd.	Balagarh Power Co. Ltd.
23-Mar-06	Torrent Power Ltd.	Torrent Power A E C Ltd. [Merged]
2-Aug-06	Bhilai Electric Supply Co. Pvt. Ltd.	N T P C-S A I L Power Co. Pvt. Ltd.
16-Apr-08	Treadsdirect Ltd. [Merged]	Geo Renewable Power Ltd. [Merged]
21-Apr-09	Entegra Ltd.	Shree Maheshwar Hydel Power Corporation Ltd.
25-Aug-09	B F Utilities Ltd.	Kalyani Utilities Development Ltd. [Merged]
16-Sep-09	V B C Ferro Alloys Ltd.	Orissa Power Consortium Ltd.
8-Dec-09	Haldia Petrochemicals Ltd.	H P L Cogeneration Ltd. [Merged]
26-Mar-10	Weizmann Ltd.	Karma Energy Ltd. [Merged]
23-Jul-10	J S W Energy Ltd.	J S W Energy (Ratnagiri) Ltd. [Merged]
26-Sep-11	S B E C Sugar Ltd.	SBEC Bioenergy Ltd.
Source: CMIE Prowess Database		

These deals are done with share swap ratio of 0: 0, which means target shareholders will gain zero share of Acquirer Company for every shares of Target Company. No shares are required to be issued by the holding Company who will take over the assets and liabilities of the subsidiary company. It means they are involved in cash deals. All the acquirer and target in this case are public limited companies. Among them five of the acquirers are unlisted companies and others are listed with BSE listing in category A, B, T, but all these target companies are unlisted. The

acquirer companies belong to the size deciles one, two, three while the target companies belong to deciles one, two, four, seven, ten with seven targets with deciles zero. Most of the deals are done in year 2009 and no deals year 2001. This cash deals comprised of 46 per cent of total deals done in this sector.

Table 4: Electricity Companies Involved in Stock Deals

Merger Date	Acquirer Company	Target Company	Share Swap Ratio (N)
12-Jun-07	Sarda Energy & Minerals Ltd.	Chhattisgarh Electricity Co. Ltd. [Merged]	91:10
23-Mar-06	Torrent Power Ltd.	Torrent Power SEC Ltd. [Merged]	47:1
9-Jun-00	Tata Power Co. Ltd.	Andhra Valley Power Supply Co. Ltd. [Merged]	4:5
31-Mar-96	Nava Bharat Ventures Ltd.	Nav Chrome Ltd. [Merged]	4:5
9-Jun-00	Tata Power Co. Ltd.	Tata Hydro-Electric Power Supply Co. Ltd. [Merged]	4:5
25-Jun-09	Jaiprakash Power Ventures Ltd.	Jaiprakash Power Ventures Ltd. [Merged]	3:1
15-Mar-03	Gujarat N R E Coke Ltd.	Gujarat NRE Power Ltd. [Merged]	3:1
14-Feb-11	Jaiprakash Power Ventures Ltd.	Bina Power Supply Co. Ltd. [Merged]	2:13
3-Dec-08	Indiabulls Power Ltd.	Indiabulls Power Services Ltd. [Merged]	1:1
2-Dec-04	Neelachal Ispat Nigam Ltd.	Konark Met Coke Ltd. [Merged]	1:1
17-Apr-06	India Infrastructure Developers Ltd.	L&T Power Investments Pvt. Ltd. [Merged]	1:1
26-Apr-00	Sterlite Industries (India) Ltd.	Madras Aluminium Co. Ltd.	1:2
5-Jul-10	Reliance Power Ltd.	Reliance Natural Resources Ltd. [Merged]	1:4
14-Feb-11	Jaiprakash Power Ventures Ltd.	Jaypee Karcham Hydro Corporation Ltd. [Merged]	1:5
25-Jul-06	NCL Industries Ltd.	NCL Energy Ltd. [Merged]	1:6
18-Sep-00	SRHHL Industries Ltd.	Sree Rayalaseema Power Corporation. Ltd. [Merged]	1:6
15-Dec-03	Monnet Ispat & Energy Ltd.	Monnet Power Ltd. [Merged]	1:10
30-Oct-02	Kirloskar Industries Ltd.	Kirloskar Power Supply Co. Ltd. [Merged]	1:61
Source: CMIE Prowess Database			

This comprised 56 per cent of the total merger deals in electricity sector made in stock deals. Highest number of stock deals are done in the year 2000 may be because during this year the target companies are highly optimistic about the success of merger and want to retain their equity stake in the resulting firm. It may also happen that acquirer companies have been paying a higher premium for pure stock deals.

5. THE FASCINATION OF M&A IN ELECTRICITY: THE MOTIVES BEHIND THE DEALS

Energy & Utilities has become a prominent topic around the world. Consumers are facing supply constraints and higher prices. Governments are concerned about energy & utilities security and climate change. Global growth and change are putting pressure on scarce energy and water resources like never before. The energy & utilities sector is in the spotlight as companies, governments and consumers grapple with issues such as security of supply, environmental impact, carbon exposure, the impact of efforts to regulate greenhouse gas emissions, and affordability. The sector is on a journey of major change, anticipating a world with a much wider range of technologies than at present and in which the industry is taking on a new shape. Companies are seeking to extend their value chain both upward and downward to secure supply and end-markets. The traditional boundaries that defined the energy & utilities industry are becoming blurred as the interdependence of different energy sectors and between utility and technology companies becomes more critical.

Table 5: Motives of Electricity Companies behind M&A Deals

Date	Deals between (Acquirer vs. Target)	Motive behind Mergers
31-Mar-96	Nava Bharat Ventures Ltd. & Nav Chrome Ltd. [Merged]	To reduce the energy cost in production of ferro alloys and to achieve economies of scale in post merger period.
18-Jan-00	STI India Ltd. & STI India Vidyut Ltd. [Merged]	To get the concessions from STI India Ltd which is considered more advantageous to set up a 9 MW capture power plant in STI India Ltd. instead in STI India Vidyut Ltd. The merger is done because STI India ltd, being 100 per cent Export Oriented Unit (EOU) is allowed various benefits like duty free import of capital goods, raw materials, spares, consumables and also fuel oil for diesel generating sets.
26-Apr-00	Sterlite Industries (India) Ltd. & Madras Aluminium Co. Ltd.	To get various benefits from the Madras Aluminium Company Ltd. (MALCO) because is considered as a primary Aluminium producer in South India with operations involving mining, refining, smelting and power generation.
9-Jun-00	Tata Power Co. Ltd. & Tata Hydro-Electric Power Supply Co. Ltd. [Merged] 59.90	To enhance the financial strength of Tata Power that will enable it to bid for larger projects. It will help those managing projects outside India and engage them basically, in the infrastructure sector of the economy for supplying bandwidth, optical fibre network.

Table 5: Motives of Electricity Companies behind M&A Deals

9-Jun-00	Tata Power Co. Ltd. & Andhra Valley Power Supply Co. Ltd. [Merged]	To enable Tata Power to have a much stronger balance sheet, focus on larger projects in future and to bring about greater liquidity of the company's stocks. The companies faced several operational hurdles due to emerging scenario of economic liberalisation and globalisation. Tata Electric becoming a single entity was an appropriate step towards overcoming such and other limitations. Tata Power was the largest private power sector company in India. The merger will again accelerate its growth. With plans going into related infrastructure of broadband communication and energy the company can also position itself as a national player in the energy and communication sector.
18-Sep-00	Sree Rayalaseema Hi-Strength Hypo Ltd (SRHHL) Industries Ltd. & Sree Rayalaseema Power Corporation. Ltd. (SRPCL) [Merged]	To get benefit from the equity participation in a profit making and large manufacturing company like SRHHL. It will also help SRPCL in getting ready customer in SRHHL and its manufacturing units for the wind power generation. SRHHL would also benefit from the deal by getting ready access to the power generation by SRPCL. Again the cash flows of SRHHL are expected to benefit SRPCL in repaying its lease finance to the Industrial Development Bank of India (IDBI). Moreover, SRHHL would enjoy financial benefits as it would no longer be required to repay the loans of Rs 10.24 crore and the interest payment of Rs 1.22 crore for 2000-01 to SRPCL.
7-Dec-00	Tata Power Co. Ltd. & Jamshedpur Power Co. Ltd. [Merged]	To increase the generating capacity by a large extent and to achieve high levels of operational efficiency.
22-Mar-02	CESC Ltd. & Cescon Ltd.	To leverage on the CESC Ltd brand name for landing more power engineering consultancy projects. Cescon Ltd was facing difficulty in branding itself despite of its domain knowledge in the field. CESC will directly enter for power sector consultancy contracts across India. The merger between Cescon Ltd and CESC Ltd will improve return compared to pre liberalisation period. The merger will consolidate the operations of CESC Ltd and secure term loans and debentures.
30-Oct-02	Kirloskar Industries Ltd. & Kirloskar Power Supply Co. Ltd. [Merged]	To meet the orders received during the year 2001-02 for re-power of defence vehicles, and also for supply of engines for Indian Navy ships. It will help to fulfil contract received the company to study the feasibility of re-powering certain Naval Ships and meet the requirements of the customers and end users.

Table 5: Motives of Electricity Companies behind M&A Deals

15-Mar-03	Gujarat NRE Coke Ltd. & Gujarat NRE Power Ltd. [Merged]	To get instant liquidity and to get financial and logistic support, the shareholders of Gujarat NRE Power made the deal as the company was facing the problem of insufficient resources for further development. Gujarat NRE Coke will also benefit from the deal in terms of rationalisation and synergies. The performance of Gujarat NRE Coke extremely good in merger year and in post merger, it is expected to do even better when revenues from the generation of power from waste heat is taken into account. Again addition of two more chimneys with 56 ovens will benefit the company.
25-Jul-03	Reliance Infrastructure Ltd. & BSES Andhra Power Ltd. [Merged]	To reform the entire power distribution sector.
15-Dec-03	Monnet Ispat & Energy Ltd. & Monnet Power Ltd. [Merged]	To expand its sponge iron capacity to 750,000 tonne from the existing 300,000 tons and lead to a combined entity with estimated revenues of over Rs 600 crore. The merger will create an integrated company and will help for growth. The new merged entity will have access to coal and iron ore, prime raw materials of sponge iron. It will also have access to captive power.
11-Feb-04	CESC Ltd. & Balagarh Power Co. Ltd.	To meet the growing power requirement in the state by setting up of a 500 MW thermal power station.
10-Sep-04	Websol Energy System Ltd. & Delta PV Pvt. Ltd.	To make it a 100 per cent owned subsidiary.
2-Dec-04	Neelachal Ispat Nigam Ltd. & Konark Met Coke Ltd. [Merged]	To get integrated plant with concomitant benefits. Integration of all units will lead to improved techno-economics, higher capacity utilisation, improved productivity, cost savings and higher profitability.
23-Mar-06	Torrent Power Ltd. & Torrent Power SEC Ltd. [Merged]	To have better balance sheet for upcoming investments opportunities in the sector in the country. Most companies and the states which offer opportunities in power sector normally look for big balance sheet and so the merger would give us that necessary background to compete at the national level.
23-Mar-06	Torrent Power Ltd. & Torrent Power AEC Ltd. [Merged]	To enable the group to leverage its existing material and human resources for enhancing the value of all its stakeholders. With the merger of three companies, the total turnover of the new company would touch Rs 2,400 crore.

Table 5: Motives of Electricity Companies behind M&A Deals

17-Apr-06	India Infrastructure Developers Ltd. & L&T Power Investments Pvt. Ltd. [Merged]	To focus on core an area, as (on October 2005) company has totally exited from the packaging business by sale of its Glass Containers Business to ACE Glass. . To exploit the opportunities that will come from hydrocarbon, infrastructure, power, minerals & metals and other industrial sectors.
25-Jul-06	NCL Industries Ltd. & NCL Energy Ltd. [Merged]	To increase the market price of equity shares, to expand and modernise, to have low capital cost.
2-Aug-06	Bhilai Electric Supply Co. Pvt. Ltd. & NTPC-SAIL Power Co. Pvt. Ltd.	To reduce the operational, administrative and managerial expenses, the merger of these two entities is done as they are in the same business of power generation and under the same management.
10-May-07	GVK Power & Infrastructure Ltd. & Bowstring Projects & Investment Pvt. Ltd. [Merged]	To align all GVK infrastructure companies under one roof thereby enabling GVK to position itself as an integrated infrastructure company to leverage emerging opportunities in this sector. It will also provide better realisation of value for our investors
12-Jun-07	Sarda Energy & Minerals Ltd. & Chhattisgarh Electricity Co. Ltd. [Merged]	To become a leading energy and minerals company.
21-Apr-09	Entegra Ltd. & Shree Maheshwar Hydel Power Corporation Ltd./SKG Power Ventures Pvt. Ltd	To reduce the peak power deficit in Madhya Pradesh and also provide much needed water supply to the region.
25-Jun-09	Jaiprakash Power Ventures Ltd. & Jaiprakash Power Ventures Ltd. [Merged]	To enable creation of an integrated corporate structure for development of power business of the group, to achieve economies of scale, operational and managerial efficiency and to enhance resource mobilisation capacity required for growth. It would also result in uniform management philosophy, utilisation of common pool of talent, flexibility in funding expansion plans and achieving better cash flows substantially enhancing shareholders' value. It would also result in better utilisation of resources and capital and would not only create a stronger base for future growth of the power business but would also result in creating a better and healthier balance sheet facilitating participation in upcoming large power projects. The amalgamation also enhances the competitive strength of the company to participate vigorously in high growth opportunities available in the power sector.

Table 5: Motives of Electricity Companies behind M&A Deals

8-Dec-09	Haldia Petrochemicals Ltd. & H P L Cogeneration Ltd. [Merged]	To invest in plant and technology that would reduce the generation cost, which is currently "reasonably higher" than the cost of grid power. The acquisition will help HPL meet its energy requirements that are slated to increase as HPL has embarked on a 30 per cent capacity expansion. It will also offer flexibility in fuel usage.
5-Jul-10	Reliance Power Ltd. & Reliance Natural Resources Ltd. [Merged]	To get resource benefit like gas from the RNRL's Coal Bed Methane (CBM) blocks. It comprises of 45 per cent interest in four blocks with acreage of 3,251 sq. km. and an estimated resources of 193 billion cubic metres; and a 10 per cent share in oil and gas block in Mizoram, with acreage of 3,619 sq. km. and a reserve potential of up to 28 billion cubic metres. It would also benefit because of reliability and cost efficiency for fuel supplies through the RNRL's coal supply logistics and shipping business; contribution from the RNRL's net worth of Rs.1,900 crore, leading to an increase in Reliance Power's net worth to more than Rs.16,000 crore. It would further speed up Reliance Power's overall growth prospects. The RNRL's shareholders will also benefit from the amalgamation by taking part in future growth prospects of Reliance Power's diversified generation portfolio of 37,000 MW, and its substantial coal reserves in India and abroad.
14-Feb-11	Jaiprakash Power Ventures Ltd. & Bina Power Supply Co. Ltd. [Merged]	To restructure the power business of the group for achieving economies of scale, operational and managerial efficiency and enhance resource mobilisation capacity for growth.
14-Feb-11	Jaiprakash Power Ventures Ltd. & Jaypee Karcham Hydro Corporation Ltd. [Merged]	To restructure the power business of the group for achieving economies of scale, operational and managerial efficiency and enhance resource mobilisation capacity for growth.
Sources: Collected from different online sources		

These various benefits discussed above have motivated electricity companies to go for M&A deals in India.

6. LITERATURE REVIEW

There is vast number of research literatures on effects of mergers, acquisitions, and takeovers on company performance. Study of both Indian and International research papers are made on the works relating to post merger corporate financial performance. As surveyed through literature most of the work is done in USA & UK apart from Malaysia, Japan, Australia, Greece, Canada, and India. But limited works are done with respect to India. Research on M&As till date has not been able to provide conclusive evidence whether they enhance efficiency or destroy wealth. The literature review is organised as 'Studies using Accounting Measures', 'Studies using Event

studies', 'Studies using multiple performance measures', 'Studies on post merger performance in electricity companies'.

6.1. Studies Focusing on Accounting Approach

Accounting approach use accounting and financial measures from financial statements to evaluate the M&A success. There is evidence from various research studies that shareholders get negative returns after M&A. There is no positive return from merger (Meeks, 1977; Mueller, 1980; Chatterjee and Meeks, 1996; Parrino and Harris, 2001; Ghosh, 2001; Sharma and Ho, 2002; Salter and Weinhold, 1979 cited from Bruner, 2004). Acquiring firms' performs poorly in post merger years (Meeks, 1977 cited from Bruner, 2004). The firms with tender offer activity were 3.1 per cent less profitable than firm without the activity (Ravenscraft and Scherer, 1987; Dickerson, Gibson and Euclid, 1997; Mueller, 1980 cited from Bruner 2004; Singh, 1975 cited from Daga, 2007). Acquirers get return on assets same as non acquirers, thus making M&A a zero Net Present Value (NPV) activity (Healy, Palepu and Ruback, 1992). So above studies give evidence that M&A are value destroying activities. There is post merger improvement of companies involved in merger (Herman and Lowenstein, 1988; Ravenscraft and Scherer, 1989). The performance of merged firms improves significantly after they are combined. Buyers, targets, combined firms underperform their peers in five years before merger, and outperform their peers in five years after (Carline et al, 2004). There is improvements in long run operating cash flow performance after acquisition because of both increases in return on sales (operating cash flow per dollar of sales) and in asset turnover (sales per dollar of assets) (Rahman and Limmack, 2004). There are cases where companies involved in M&A may give both positive and negative returns. Operating synergies in the form of additional cash flows is positive (12.9 per cent) and financial synergies in the form of changes in required rate of return is negative (-3.6 per cent) after M&A (Seth, 1990). Pautler (2001) made literature survey and found that pre merger and post merger studies provide no clear answers to questions about the efficiency and market power effects of M&As. In case of large scale studies (those used large sample, as viewed by Pautler, 2001) M&A are unsuccessful. There is significant gain to target firms and little or no gains to acquiring firms. Again there is price enhancement and cost reduction in multiple merger cases. Thus, from the above literature it is concluded that accounting based studies shows mixed results. These mixed results may be because of studies made in different countries or using different performance variables or other deal specific factors.

6.2. Studies Focusing on Event Study Approach

The approach for the examination of abnormal stock returns to the shareholders of both acquirer and target around the announcement of an offer is called event studies, event being the M&A announcement. Acquisitions are not value-enhancing for shareholders (Morck et al. 1990). Stockholders of the acquiring firm experience a statistically significant wealth loss of about 10 per cent over five years after merger completion date (Agrawal et al., 1992). There is a small and insignificant abnormal return for acquirer at the date of takeover announcement (Halpern, 1973; Mandelkar, 1974; Ellert, 1976 from Brailsford and Knights, 1998).There is a negative relationship between management shareholdings and post acquisition performance of high tech acquisitions. High managerial ownership seems to reduce managers' risk aversion and encourage over investment in value diminishing high tech acquisitions (Gao and Sudarsanam, 2003).The acquiring firm experiences considerably deteriorating operating performance after acquisition, but the poor performance is generally not different from industry counter parts (Ken, 2004). The returns to the acquiring companies are either zero or negative (Maletesta 1983 cited from Bruner, 2004). It is also found that the post merger stock price and operating performance of the merged companies are negative and even worse than the stock price and operating performance of a control portfolio

of companies that did not merge (Becker et al., 2008). Various studies show evidence that both acquiring and target firm get positive returns from M&A. Stockholders of target firms earn large positive abnormal returns from tender offers (Dodd and Ruback, 1977; Moeller et al. 2004; Dennis and McConnell 1986; Asquith et al. 1983; Leeth, 2000). The cumulative abnormal return is statistically significant giving positive returns acquiring firm shareholders (Loderer and Martin, 1992; Frederikslust et al., 2005; Dutta and Jog, 2009). Combined returns to shareholders of acquiring firm and target firm showed positive cumulative abnormal returns to both firms (Berkovitch, 1993; Bradley et al., 1982; Mulherin, 2000; Fan and Goyal, 2002). Target return, acquirer return and total returns are larger when targets have low q ratios and acquirers have high q ratios (Servaes, 1991). Literature suggests that M&A returns are based on who gets the returns, the timing of getting return. Acquiring firm shareholders make small gains before and large losses after consolidation (Leeth and Borg, 1994). The shareholder value is found to be positive, even though it is small (Pautler, 2001). Mergers and acquisitions result in benefits to the acquired firms' shareholders and to the acquiring companies' managers while in case of losses, it is suffered by the acquiring companies' shareholders (Firth, 1980). Shareholders of target firm gain while shareholders of acquirer either gain or lose (Kaplan and Weisbach, 1992). Mergers that focus both geography and activity are value-increasing, whereas diversifying mergers do not create value (DeLong, 2001). In stock market studies, it is found that there is significant gain to target firm shareholders and little or no gain to acquiring firm shareholders around the time when the mergers and acquisitions took place. Over the long-term, in the post announcement period, acquiring firms earn lower returns relative to those earned in the pre acquisition performance but their relative performance remains exceptionally good (Rosa et al., 2003). Since the return varies in different situations, it is therefore important to know for whom performance is to be evaluated-target, acquirer or combined firm; for which time period performance is to be evaluated-short term or long term. There is mixed results in event study methodology also. It is therefore needed to know the results of studies that have used both accounting return and event study methods to evaluate the M&A performance.

6.3. Studies Focusing on Mixed Approach

Several studies are based on multiple performance measures which may not be classified purely related to accounting measures or event studies. For short run announcement period, the average cumulative abnormal return is positive and similar for the first merger for single as well as multiple acquirers (Paul et al., 2001). The post merger impact appears stronger when measured against the acquirer's results alone. In the banking industry, acquirers tend to be over-achievers and they add to profitability in post merger period. The positive post merger results are consistent with the industry results (Knapp, et al. 2006). The financial performance of manufacturing companies using the rate of return on equity and rate of return on total assets improved after merger (Katsuhiko and Noriyuki, 1983). The profitability ratios show that the majority of merged banks show a decline in financial performance (Kithinji and Waweru, 2007). Long term performance is significantly greater for diversifying mergers. The acquirer company's pre merger performance partially outperforms the post merger performance of merged company. Since the post merger operating performance of combined company is poor than pre merger performance of the acquirer, the acquirer company may have done better without such transaction (Kukalis, 2007). Apart from the traditional parameters like ROA and ROE, economic value added (EVA) is also taken for performance evaluation. One such study is made for Chinese firms. The profitability and growth of such firms involved in M&A first falls and then rises (Wang and Qian 2006). Companies improved efficiency through M&A in the year of M&A having better performance

than average of the industry (Xiao and Tan, 2007). The analysis of pre and post merger profitability and efficiency ratios for the acquiring firms shows that there is a differential impact of mergers for different ratios (Agarwal, Nataraj and Singh, 2010). In nutshell, it is observed that returns to acquirer are situational and the returns vary accordingly influenced by different factors relating to M&A.

6.4. Studies Based on Post Merger Performance of Electricity Companies

Studies on post merger performance of electricity companies were few as far as literature is reviewed. Limited studies are made based on accounting and event studies. Mostly were conceptual and review oriented papers. Kwoka (2006) found that mergers produce efficiencies that provide benefit to consumers and shareholders in same manner. The results were applicable to the economy as a whole as well as for mergers amongst electricity companies. Mergers helped in terms of increased size, and realised economies of scale. Generators and distribution companies go for mergers to have benefit of economies of scale. Acquirer companies are not efficient in pre merger and acquisition years and therefore whatever their objectives of merger may be, they are not in a position to transfer efficiencies to target companies. Target electricity companies are better performer than the acquirer. The performance levels of target companies after merger did not increased and declined significantly. The acquirers in electricity companies rather than acquiring underperforming firms they have acquired better performers. There were no efficiency transfers and the efficiency of the target companies have declined. It was expected to have net efficiency gains from merger but there were no gains at all.

Kwoka (2007) analysed the impact on operating and total cost in electricity distribution using data envelopment analysis to measure the efficiency of each operating unit. It was found that electricity mergers are inconsistent with improved cost performance. In terms of timing, the merger effects are seen fairly consistent except for the years immediately before and immediately after the merger.

Leite and Castro (Unknown) observed that unlike the United States , in the European Union, it is considered illegal for a firm if it uses its dominant market position (even one gained by innovation, efficiency etc.) to abuse its market power. Firms cannot fix prices which are considered high, i.e. where margins above costs are greater than the average range for prices set by competitive firms. These types of mergers are considered as harmful for social welfare (Leveque, 2006; Gilbert and Newberry, 2006) because, by reducing inefficiency in vertical transactions, it will lead to reduced costs and thus lower prices.

Blease, Goldberg and Kaen (2004) found that mergers and acquisitions do not create value for a fully diversified investor. Acquiring firms do not perform well after deal completion. Buy and hold returns and operating performance measures show negative returns after deal completion. Acquirers acquiring more than one target experience poor stock price and operating performance during and after acquisitions. The merger and acquisition done by electricity companies in regard to deregulation did not create value for their shareholders and thus reap no synergistic benefits out of the mergers.

Gilbert, R & Newbery, D (2006) found that vertical mergers between electricity companies and gas companies with market power in the gas market (often secured through their control over the pipeline network and storage and balancing services) are problematic, as the incentive to raise gas prices may be enhanced through ownership of electricity generation. The author suggested that

regulatory bodies and competition authorities must be particularly vigilant in scrutinising mergers in the electricity and gas sectors to ensure competitive environment.

7. RESULTS AND DISCUSSIONS

The performance is evaluated taking into various parameters like Return on Net worth (RONW) and Return on Capital Employed (ROCE), Current Ratio (CR), Quick Ratio (QR), Net Working Capital by Sales Ratio, Interest Coverage Ratio (ICR), Total Debt Ratio (TDR) and Asset Turnover Ratio (ATR). The following results are found:

Table 6: Pre and Post Merger One Year Return on Capital Employed

Year	Rs. Crore	T-1 (ROCE)	T0 (ROCE)	T+1(ROCE)
2000	Tata Power Co. Ltd.	0.12	0.14	0.12
2003	Reliance Infrastructure Ltd.	0.12	0.07	0.05
2004	C E S C Ltd.	0.12	0.15	0.13
2006	Torrent Power Ltd.	0	0.13	0.03
2009	Jaiprakash Power Ventures Ltd.	0.18	0.13	0.06
2010	J S W Energy Ltd.	0.18	0.16	0.12
		0.12	**0.13**	**0.09**

During the post merger first year the return on capital employed for electric companies have not improved and decreased even if it has risen compared to pre merger and merger year.

Table 7: Pre and Post Merger One Year Return on Net Worth

Year	Rs. Crore	T-1 (RONW)	T0 (RONW)	T+1(RONW)
2000	Tata Power Co. Ltd.	0.1	0.13	0.1
2003	Reliance Infrastructure Ltd.	0.11	0.05	0.05
2004	C E S C Ltd.	0.02	0.18	0.12
2006	Torrent Power Ltd.	0	0.07	0.03
2009	Jaiprakash Power Ventures Ltd.	0.21	0.13	0.07
2010	J S W Energy Ltd.	0.29	0.16	0.15
		0.12	**0.12**	**0.09**

During the post merger first year the return on net worth for electric companies have not improved and decreased If compared pre merger with merger year the RONW has remain unchanged.

Table 8: Pre and Post Merger Two Year Return on Capital Employed

Year	Acquirer	T-2 (ROCE)	T-1 (ROCE)	T0 (ROCE)	T+1(ROCE)	T+2(ROCE)	pre 2 year	post 2 year
2000	Tata Power Co. Ltd.	0.13	0.12	0.14	0.12	0.14	0.13	0.13
2003	Reliance Infrastructure Ltd.	0.12	0.12	0.07	0.05	0.07	0.12	0.06
2004	C E S C Ltd.	0.11	0.12	0.15	0.13	0.12	0.12	0.13
							0.12	**0.11**

It is not only during the first year but during the second year the performance of electricity companies decline in terms of return on capital employed.

Table 9: Pre and Post Merger Two Year Return on Net worth

Year	Acquirer	T-2 (RONW)	T-1 (RONW)	T0 (RONW)	T+1(RONW)	T+2(RONW)	Pre 2 Year	Post 2 Year
2000	Tata Power Co. Ltd.	0.11	0.1	0.13	0.1	0.12	0.11	0.11
2003	Reliance Infrastructure Ltd.	0.12	0.11	0.05	0.05	0.09	0.12	0.07
2004	C E S C Ltd.	-0.2	0.02	0.18	0.12	0.11	-0.09	0.12
							0.04	**0.10**

In terms of return net worth, the companies have improved after post merger and they were able to generate money for the investments made by the shareholders.

Table 10: Pre and Post Merger Three Years Return on Capital Employed

Year	Acquirer	T-3 (ROCE)	T-2 (ROCE)	T-1 (ROCE)	T0 (ROCE)	T+1(ROCE)	T+2(ROCE)	T+3(ROCE)	pre 3 year	post 3 year
2000	Tata Power Co. Ltd.	0.13	0.13	0.12	0.14	0.12	0.14	0.15	0.3	0.14
2003	Reliance Infrastructure Ltd.	0.15	0.12	0.12	0.07	0.05	0.07	0.08	0.31	0.07
2004	C E S C Ltd.	0.08	0.11	0.12	0.15	0.13	0.12	0.14	0.23	0.13
									0.28	**0.11**

Return on capital employed again decreased in post merger three years compared to pre merger three years.

Table 11: Pre and Post Merger Three Year Return on Net Worth

Year	Acquirer	T- (RONW)	T-2 (RONW)	T-1 (RONW)	T0 (RONW)	T+1(RONW)	T+2(RONW)	T+3(RONW)	pre 3 year	post 3 year
2000	Tata Power Co. Ltd.	0.08	0.11	0.1	0.13	0.1	0.12	0.11	0.22	0.11
2003	Reliance Infrastructure Ltd.	0.13	0.12	0.11	0.05	0.05	0.09	0.09	0.29	0.08
2004	C E S C Ltd.	-0.98	-0.2	0.02	0.18	0.12	0.11	0.15	-1.17	0.13
									-0.22	**0.10**

Even though the return on net worth has improved in second year, it has again declined in post merger three years. It means in initial years due to merger pressure the profitability has declined, and then it improved when company became stable and then it declined being affected by other factors.

Table 12: Pre and Post Merger One Year Asset Turnover Ratio

	Company Name	**T-1 (ATR)**	**T0 (ATR)**	**T+1(ATR)**
2000	Tata Power Co. Ltd.	0.35	0.38	0.44
2003	Reliance Infrastructure Ltd.	0.6	0.78	0.4
2004	C E S C Ltd.	0.38	0.46	0.49
2006	Torrent Power Ltd.	0	0.85	0.24
2009	Jaiprakash Power Ventures Ltd.	0.15	0.15	0.07
2010	J S W Energy Ltd.	0.32	0.27	0.29
		0.30		**0.32**

The ratio of sales to assets, or asset turnover ratio shows improvement in initial first year of merger and the companies have increased the capital-intensity capacity of a business, and it has used assets to produce revenue. The companies like Tata Power Co. Ltd., Reliance Infrastructure Ltd., CESC Ltd have improved performance individually in post merger years. The performance of Jaiprakash Power Ventures Ltd. has remained unchanged and J S W Energy Ltd. has negative performance in terms of asset turnover ratio.

Table 13: Pre and Post Merger Two Year Asset Turnover Ratio

Asset Turnover Ratio	**Acquirer**	**T-2 (ATR)**	**T-1 (ATR)**	**T0 (ATR)**	**T+1(ATR)**	**T+2 (ATR)**	**pre 2**	**post 2**
2000	Tata Power Co. Ltd.	0.4	0.35	0.38	0.44	0.45	0.38	0.45
2003	Reliance Infrastructure Ltd.	0.51	0.6	0.78	0.4	0.34	0.56	0.37
2004	C E S C Ltd.	0.35	0.38	0.46	0.49	0.37	0.37	0.43
2009	Jaiprakash Power Ventures Ltd.	0.16	0.15	0.15	0.07	0.04	0.16	0.06
							0.36	0.33

The two year average asset turnover ratio has declined when compared between pre and post merger years by three per cent.

Table 14: Pre and Post Merger Three Year Asset Turnover Ratio

	Acquirer	T-3 (ATR)	T-2 (ATR)	T-1 (ATR)	T0 (ATR)	T+1(ATR)	T+2(ATR)	T+3(ATR)	pre 3	post 3
2000	Tata Power Co. Ltd.	0.49	0.4	0.35	0.38	0.44	0.45	0.49	0.41	0.46
2003	Reliance Infrastructure Ltd.	0.53	0.51	0.6	0.78	0.4	0.34	0.27	0.55	0.34
2004	C E S C Ltd.	0.31	0.35	0.38	0.46	0.49	0.37	0.34	0.35	0.40
									0.44	**0.40**

If assets turnover ratio is looked then there is no difference in the pre and post merger performance in three years average.

Table 15: Performance of Tata Power Co. Ltd for deal with Andhra Valley Power Supply Co. Ltd.

Year	RONW	ROCE	ATR	CR	QR	NWCS	ICR	TDR
Mar-95	0.11	0.11	0.49	1.1	0.52	780.04	2.57	0.52
Mar-96	0.18	0.19	0.5	0.4	0.4	-31.5	4.94	0.47
Mar-97	0.08	0.13	0.49	1.24	0.58	134.29	3.65	0.42
Mar-98	0.11	0.13	0.4	1.61	1.03	9	3.79	0.49
Mar-99	0.1	0.12	0.35	1.28	0.7	36.31	3.48	0.5
Average of 5 year pre merger	0.12	0.14	0.45	1.13	0.65	185.63	3.69	0.48
Mar-00	**0.13**	**0.14**	**0.38**	**0.96**	**0.56**	**-15.8**	**4.16**	**0.5**
Mar-01	0.1	0.12	0.44	1.76	1.33	4.35	3.28	0.5
Mar-02	0.12	0.14	0.45	1.2	0.82	31.48	3.26	0.49
Mar-03	0.11	0.15	0.49	1.12	0.69	-35.78	3.39	0.45
Mar-04	0.1	0.15	0.53	1.1	0.67	-80.14	3.83	0.36
Mar-05	0.11	0.11	0.43	1.73	1.31	5.53	5.32	0.44
Average of 5 year post merger	0.11	0.13	0.47	1.38	0.96	-14.91	3.82	0.45
Source: Evaluated from Financial data from CMIE Prowess Database								

While evaluating performance of particular merger deal of Tata Power Co. Ltd with Andhra Valley Power Supply Co. Ltd. [Merged], following findings are made:

- Return on Net Worth of Tata Power Co. Ltd improved in merger year if compared with five year average of pre merger. But if five year average of pre and post merger is compared then it has reduced.

- Return on Capital Employed of Tata Power Co. Ltd has remained unchanged if compared with five year average of pre merger and if five year average of pre and post merger is compared then it has reduced.
- Asset Turnover Ratio which is considered as best measure for companies that require a large infrastructure in order to produce, or deliver their product, such as electric companies that require a large asset base to generate sales, has improved if five year average of pre and post merger is compared.
- Current Ratio and Quick Ratio has increased in five year average of post merger when compared with five year average pre merger years.
- Net Working Capital/ Sales have declined significantly and has given negative returns in post merger years.
- Tata Power Co. Ltd were able to generate sufficient money to pay back its debt as the Interest Coverage Ratio has improved from 3.69 to 3.82 in five year average pre and post merger year. The good thing is Total Debt Ratio has reduced which show the debt burn of the companies have reduced after getting synergetic befits from the deal.

8. CONCLUSION

Electricity companies are going on merger spree for improving their market share by solving many financial issues like cost. Post merger performance of companies have been better in second year, while in the first year and average of three years the electricity companies have declined in different ratios. The return on capital employed has never improved. But the return on net worth and asset turnover ratio has increased in two year average pre and post merger years. Mergers and acquisitions (M&A) in the electricity sector are expected to grow in coming years because to keep the sector highly profitable in both the short and long term, there is need of M&A. The electricity companies with strong financial backup acquiring leading to expansion of industry and company. At that time, the electric power industry will enjoy a long-term development in a physically sound way. No doubt M&A in electricity industries have resulted in economies of scale and synergetic benefits to companies but still, it is suggested that acquirer companies should acquire those target companies whose benefit is above its costs as there are also many problems associated with it like job cuts which may hamper the ethical and cultural values. Following economic expansion and large demand for power, the electric power industry has stepped in an accelerated phase of M&A. The current market is that the major role was played by government owned companies while private players small part. The local electricity companies have stayed focused on acquisition to improve their core competitiveness with expanding market share.

REFERENCES

Agrawal, A., Jaffe, J.F., Mandelker, G.N. (1992). The Post Merger Performance of Acquiring Firms: An Re-examination of Analomy, *Journal of Finance*, 47(4), 1605-1621.

Asquith, P., Bruner, R.F., Mullins, D.W. (1983). The Gains to Bidding Firms from Merger, *Journal of Financial Economics,* 11(1-4), 121-139.

Becker, J. R., Goldberg, L.G., & Kaen, F.R. (2008). Mergers and Acquisitions as a Response to the Deregulation of the Electric Power Industry: Value Creation or Value Destruction?, *Journal of Regulatory Economics*, 33(1), 21-53

Berkovitch, E. & Narayanan, M.P. (1993). Motives for Takeovers: An Empirical Investigation, *Journal and Financial Quantitative Analysis,* 28 (3), 347-362.

Brailsford, T.J. & Knights, S. (1998). The Financial and Non-Financial Effects of Corporate Takeovers, Working Paper No. 23/98, Melbourne Institute of Applied Economic and Social Research retrieved on 6th June, 2010 from http://www.melbourneinstitute.com/wp/wp1998n23.pdf

Bruner, R.F. (2004). Applied Mergers and Acquisitions, John Wiley & Sons.

Carline, N.F., Linn, S. C., & Yadav, P. K. (2004). Can the Stock Market systematically make use of Firm and Deal Specific Factors when initially Capitalising the Real Gains from Mergers and Acquisitions?, retrieved on 12th May 2009 from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=567110

Daga, V. (2007). Post Merger Profitability Analysis of Shareholders: Evidence from Europe, Unpublished Master's Dissertation, retrieved on 29th November 2011 from http://edissertations.nottingham.ac.uk/1094/1/07MAlixvd1.pdf

DeLong, G. L. (2001). Stockholder Gains from Focusing versus Diversifying Bank Mergers, *Journal of Financial Economics*, 59 (2), 221-252.

Dennis, D.K. & Mcconnell, J.J. (1986). Corporate Mergers and Security Returns, *Journal of Financial Economics,* 16 (2), 143-187.

Dickerson, A.P., Gibson, H.D., & Euclid (1997). The Impact of Acquisitions on Company Performance: Evidence from a Large Panel of UK Firms, *Oxford Economic Papers, New Series,* 49(3), 344-361.

Dodd, P., & Ruback, R. (1977). Tender Offers and Shareholder Returns: An Empirical Analysis, *Journal of Financial Economics,* 5 (3), 371-374.

Dutta, S., & Jog, V. (2009). The Long-Term Performance of Acquiring Firms: A Re-Examination of an Anomaly, *Journal of Banking & Finance,* 33(8), 140-141.

Fan, J. P. H., & Goyal, V.K. (2002). On the Patterns and Wealth Effects of Vertical Mergers, Hong Kong , *University of Science and Technology Working Paper*, retrieved on 2nd May 2010 from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=296435

Firth, M. (1980). Takeovers, Shareholder's Returns and Theory of Firm, *Quarterly Journal of Economics,* 94 (2), 235-260.

Frederikslust, R.A.I.V., & Wal, V.V.D, Westdijk, H. (2005). Shareholder Wealth Effects of Mergers and Acquisitions, retrieved on May 18, 2009 from http://www.efmaefm.org/efma2005/papers/262-van-frederikslust_paper.pdf

Gao, L., Sudarsanam, P. S. (2003): Value Creation in UK High Technology Acquisitions, retrieved on 4th June 2009 from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=493762, accessed on

Ghosh, A. (2001). Does Operating Performance really improve following Corporate Acquisitions? *Journal of Corporate Finance,* 7(2), 151-178.

Gilbert, R & Newbery, D (2006). Electricity Merger Policy in the Shadow of Regulation accessed on 15th February 2012 available from http://www.iern.net/portal/page/portal/IERN_HOME/IERN_ARCHIV/Publications/Competition_Issues/57AA9CE3ED0240C1E040A8C03C2F75CB

Katsuhiko, I. & Noriyuki, D. (1983). The Performances of Merging Firms in Japanese Manufacturing Industry: 1964-75, *The Journal of Industrial Economics*, 31(3), 257-266.

Ken, C. Y. (2004). The Measurement of Post Acquisition Performance using EVA, retrieved on 12th March 2010 from http://www.allbusiness.com/public-administration/administration-economic-programs/990660-1.html

Kithinji, A.M., & Waweru, N.M. (2007). Merger Restructuring and Financial Performance of Commercial Banks in Kenya *Journal of Economics*, *Management and Financial Markets*, 2(4), 10-32.

Kukalis, S. (2007). Corporate Strategy and Company Performance: The Case of Post Merger Performance, *The International Journal of Finance*, 19(3), 4475-4489.

Kumar, B. R., Rajib, P. (2007a). Mergers and Corporate performance in India: An Empirical Study, *IIMC Decision*, 34(1), 121-147.

Kumar, B. R., Rajib, P. (2007b). Characteristics of Merging Firms in India: An Empirical Examination, *IIMA Vikalpa*, 32(1), 27-45.

Kumar, R. (2009). Post Merger Corporate Performance: An Indian Perspective, *Management Research News* 32(2), 145-157.

Kwoka, J. (2006). Promises, Promises: Competition and Efficiency in the Restructured Electricity Sector, accessed on 15th February 2012 available from http://www.antitrustinstitute.org/files/486d.pdf

Kwoka, J. (2007). Do Mergers improve Efficiency? Evidence from Restructuring the U.S. Electric power sector accessed on 15th February 2012 available from http://www.dspace.cam.ac.uk/bitstream/1810/194705/1/0725%26EPRG0708.pdf

Leeth J. D., Borg, J. R. (2000). The Impact of Takeovers on Shareholder's Wealth during the 1920s Merger Wave, *Journal of Financial and Quantitative Analysis*, 35, (2), 217-238.

Leeth, J.D., & Borg, J. R. (1994). The Impact of Mergers on Acquiring Firm Shareholder Wealth: The 1905-1930 Experience, *Ernpirica* 21,221-244.

Leite, A.L.D.S; Castro, N.J.D, Soares, M.I.R.T (Unknown). Electric Sector Mergers And Acquisitions: Lessons from the European Union, accessed on 15th February 2012 available from www.brazilink.org/tiki-download_file.php?fileId=117

Loderer, C., & Martin, K. (1992). Post Acquisition Performance of Acquiring Firms, *Financial Management*, 21, 69-79.

Marcenaro, E (Unknown). Whose risk is it anyway? The Allocation of Risks related to a M&A Transaction in the Energy Sector

Masulis, R W; Wang, C and Xie, F (2005). Corporate Governance and Acquirer Returns, *ECGI-Finance Working Paper No. 116/*2006 Journal of Finance, retrieved on 13th November 2011http://www.afajof.org/afa/forthcoming/2893.pdf

Moellera, S.B., Schlingemannb, F.P., Stulz, R.M. (2004). Firm Size and the Gains from Acquisitions, *Journal of Financial Economics,* 73(2), 201–228.

Morck, R., Shleifer, A., & Vishny, R.W (1990) Do Managerial Objectives Drive Bad Acquisitions?, *Journal of Finance,* 45 (1), 31-48.

Pautler, P.A. (2001). Evidence on Mergers and Acquisitions, retrieved on18th May 2010 from http://www.ftc.gov/be/workpapers/wp243.pdf

Rahman, R. A., & Limmack, R.J. (2004). Corporate Acquisitions and the Operating Performance of Malaysian Companies, *Journal of Business Finance & Accounting*, 31(3-4), 359-400.

Rosa, R.D. S., Engel, R., Moore, M., & Woodliff, D. (2003). Post Acquisition Performance and Analyst following US Evidence, retrieved on 29th November 2011 from http://wwwdocs.fce.unsw.edu.au/banking/seminar/2003/MarkMoore.pdf

S, Shikha (2009). State Electricity Board in Troubled Waters, JK *Journal of Management & Technology*, 1(1), 101–112.

Servaes, H. (1991). Tobin's Q and the Gains from Takeovers, *Journal of Finance,* 4 (1) 409-419.

The Electricity Act, 2003, accessed on 21st December 2011 available from http://www.cercind.gov.in/08022007/Act-with-amendment.pdf

Wang, L. & Qian. (2006). An Empirical Study of the Performance of China's Cross-Border Mergers & Acquisitions Activity, retrieved from http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=4105196

Xiao, X., & Tan, L. (2007). Research of M&A Performance of Listed Companies in China based on EVA, retrieved on May 14, 2010 from http://ieeexplore.ieee.org/xpls/abs_all.jsp?arnumber=5190469&tag=1

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FEMALE EMPLOYMENT IN TURKEY AND STRUCTURAL TRANSFORMATION AFTER THE YEAR 2000

Melike Elif Bildirici[1], Elçin Aykaç Alp[2], Fulya Özaksoy[3], Barış Akgül[3]

[1]Yildiz Technical University, Department of Economics, Turkey.
[2]Okan University, Department of Banking and Finance, Turkey.
[3]Yildiz Technical University, Istitute of Social Sciences, Turkey.

KEYWORDS

Employment, female employment, U-curve.

ABSTRACT

In this study, structural transformation of female employment is scrutinized during the years 2000-2010 in Turkey. Investigated seacular has particular importance from the point of view economic crisis in both the world and Turkey. Women employment is been dramatically empierced in times of slump periods. Such that women are impelled from primary sector to secondary moreover are digressed out of labor market at that times. The shape of U-curve in women employment becomes dissimilar depending on economic crisis in thriving economies and underdeveloped countries. In this regard, the paper reconnoitres whether sectoral impact has emerged with the effect of economic depression and U-curve impact has showed an alteration in Turkey's female employment or not. The more than four million surveys which derived from Turkish Statistical Institute have analyzed within the scope of this essay. It comprehends employment scrutinies in the context of gender at the first stage and detailed evoluation that acquired by the way of cross and frequency tables as a second part.

1. INTRODUCTION

The study analyzes female labor force participation and how the process was between the years 2000-2010. The chosen period of time is uniquely important as the period includes the financial crisis of 2000-2001 and 2008. Moreover the period also makes it possible to examine not only the structural transformation of employment in Turkey and female participation to workforce but also the reaction of labor force participation rate (LFPR) against the crisis; which makes it equally important. In this regard, benefiting from the household survey conducted by Turkish Statistical Institute; the process of LFPR has been investigated according to female labor force participation. In the second part of the study, the related literature has been summarized. Finally in the third part, the acquired findings of the analysis have been presented.

2. LITERATURE

When the studies in which the relation between female labor force participation and financial development are examined, it has been found that dependence on the lowness of income rate and in periods when the agricultural production rate is high, women participate in labor force as unpaid family employee and thus a U-shaped relation is available. The availability of this relation indicates the reverse relation between production towards market and unpaid family labor. The basic studies referring to the subject and based on this U shaped relation are Durand (1975), Mincer (1985), Pampel and Tanaka (1986), Psacharopoulos and Tzannatos (1989), Schultz (1990; 1991), Kottis (1990) and Goldin (1995). In the historical process, mechanization in agriculture and technological innovations has reduced female labor force participation rate and employment opportunities for the female. The reverse process, in other words the increasing side of the U shaped relation, explains the increase in the pay rate in parallel with the increase in female educational level and correspondingly the increase of female labor force participation rate. In this regard, it is of importance that service sector has increased the demand for female labor force participation (Tansel; 2002).

A variety of factors have been influential in the low female labor force participation in the manufacturing sector. The demand for female labor force in agriculture is affected by a number of factors such as traditions, employers' preferences, low educational level, culture and household responsibilities, marriage, caring for children, overworking, slow rate of employment creation, difficulties out of business law, high rate of unemployment and hopeless employee effect. Long working hours is a significant factor as only 9% of women employed in return for a wage or salary work less than 35 hours weekly. As examples for legal obstacles, the effects of business law upon female labor force participation including codes which extend maternity leave and necessitates the establishment of day care centers in large-scale companies seem to be equally important.

The high rates of female labor force participation are seen in relatively latter periods of development. Although it is accepted that the sub limit of U curve has been surpassed and the upward slope has been reached in Turkey, a reverse movement in LFPR has been observed in recent years. A number of factors are influential on this scenario, the initial one being reverse movements as early retirement. Although we have reached the upward slope of LFPR U-curve, the LFPR in Turkey after 1990 has been following a declining process. In terms of OECD countries, while the highest rates are seen in Switzerland, the lowest is in Turkey (Bildirici; 2007). The most remarkable distinctiveness of Turkey within OECD countries is the low rate of female labor force participation.

3. DATA AND FINDINGS

The Household Labor Force Surveys conducted by Turkish Statistical Institute during the years 2000-2010 was used in Turkey. The number of surveys conducted and examined in this period is 4.629.574. Out of more than 100 questions asked in a period of 10 years, 20 questions related to the subject have been evaluated within the scope of this study. Considering the frequency tables and crosstabs of the answers given to these questions, the results presented in detail below have been acquired.

2008 labor force participation rate is lower than that of 2001. It is also important to state that the non-intuitional LFPR in Turkey generally has tended to decline after 1998. While the rate of LFPR was 57.5 % in 1998, that of 1992 was 55.8 %. In the crisis years of 2000-2001, the rate even declined to 48.5% and 48.7% and has not followed an upward trend in the following years. In

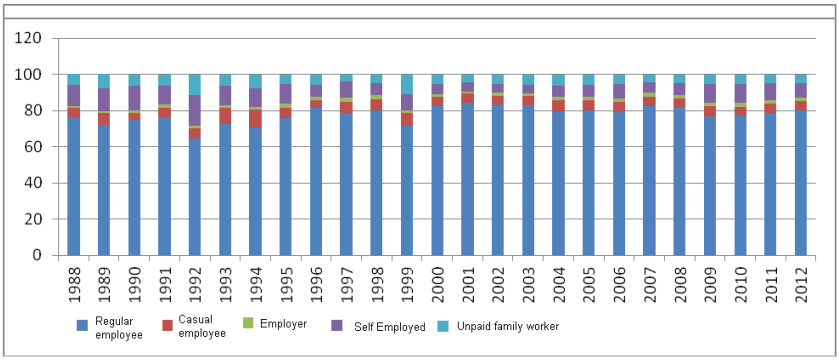
the year 2003 when the effects of the financial crisis was respectively low, the rate of LFPR was 48.3 % in Turkey; with 70.4 % in males and 26.6 % in females. The urban rate was 43.8 % in total; with 68.9 % in males and 18.5% in females. In 2006, with the effect of constriction in agriculture sector, the total LFPR in Turkey was 46.5% by a decline of 0.6 % compared to that of previous year. The LFPR in both males and females were 70.2% with a decline of 0.6 %; the rate in females was 23.1% again with a decline of 0.6 %. The urban LFPR was 44.9% with a rise of 0.6%. In the year 2008, the total LFPR in Turkey was 46.9% with a rise of 0.7 % compared to that of 2007. The rate in males was 70.1 % with a rise of 0.3 % while in females it was 24.5 % with a rise of 0.6 points. The urban rate was 45 % with a rise of 0.7 % while the rural LFPR was in the levels of 51.4 % with a rise of 0.6 %.

Figure 1: Labor Force Participation Rate of Female in Agriculture

In Figure 1 below, the female labor force participation rates in agricultural and non-agricultural sectors are presented. When a distinction is made between females participated in labor force according to employment type, the high rates of working as unpaid family employee is a crucial finding standing out. Before the financial crisis of 2000, especially in 1999, the number of females employed for individual gain declined as a result of 2000-2001 crises yet showed a profound upward trend after 2004.

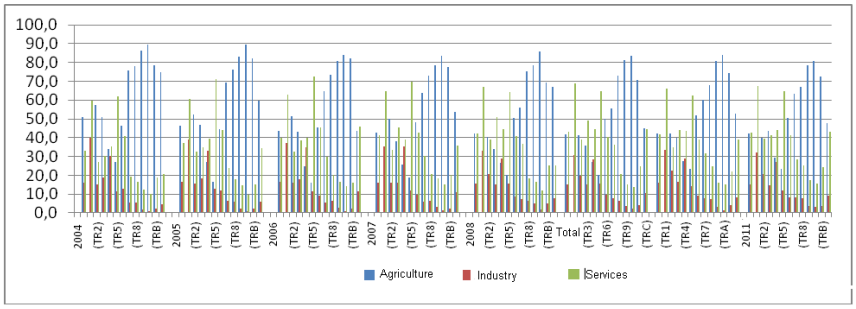
As presented in Figure 2; the number of paid female labor force rate has risen in non-agricultural sector in crisis years and afterwards. After 2008, it is seen that the rate of those employed for individual gain has risen.

Figure 2: Labor Force Participation Rate of Female in Other Sectors



Female labor force participation rates according to the regions and sectors are shown in Figure 3. While the female participation in Black Sea region and Middle East Anatolia are centered in agricultural sectors, the participation in Western Marmara is in service sectors and in Western Anatolia it is dominant in industry sector. When it is examined according to yearly periods, the scenario in Western Marmara has changed on behalf of industrial sector.

Figure 3: Female Labor Force Participation Rate by Region and Sector



(TR2: Western Marmara, TR5: Western Anatolia, TR8: western black sea TRB: middle east anatolia region. TR3: Aegean Region, TR6: Mediterranean Region, TR9: East Black Sea Region, TRC: Southeast Anatolia, TR1: İstanbul, TR4: East Marmara, TR7: Central Anatolia, TRA: Northeast Anatolia)

The reasons for low rates of female labor force participation has been examined in four main categories as working hours, distribution according to company and sector, shadow employment and occupational distribution.

Working Hours

Long working hours are also influential on low female LFPR. The active weekly working hours in Turkey have been increasing gradually. As an example; the percentage of the ones working less than 40 hours weekly was 37.8 in 1990. The percentage of the ones working more than 41 hours was 34.6 in 2000. In the year 2001 the rate of the former one declined to its lowest rate and was 32.1%. In the year 2010 the rate was 34.3 %.

Figure 4: Employment Ratio in the Reference Week for Working less than 40 Hours

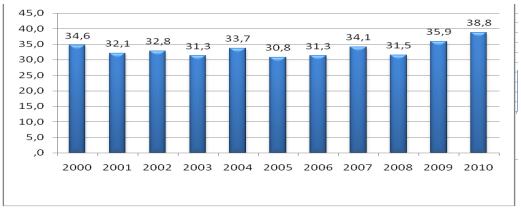
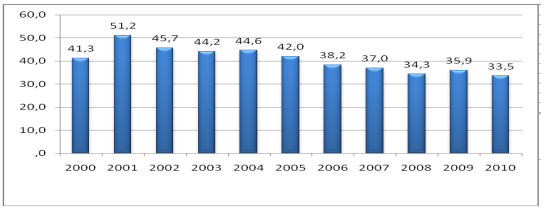


Figure 5: Employment Ratio for Working more than 20 Hours in Additional Work

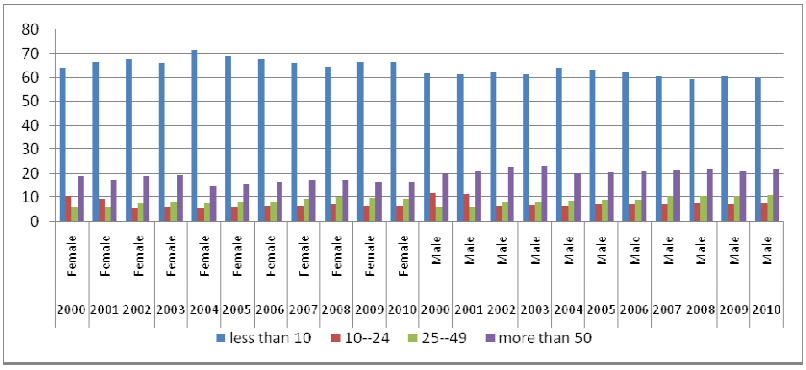


In figure 4 and 5, it is seen that both active working hours and additional working hours follow different paths. While the general tendency shows that long working hours in secondary occupation has been following a declining trend, it is of note to point out that in 2001 financial crisis, more than half of those having a secondary job worked more than 20 hours in the additional

work. It is also seen that the decline in the rates of those working for 40 hours and over 40 hours in the primary occupation was reversed and there has been an increase following the year 2009.

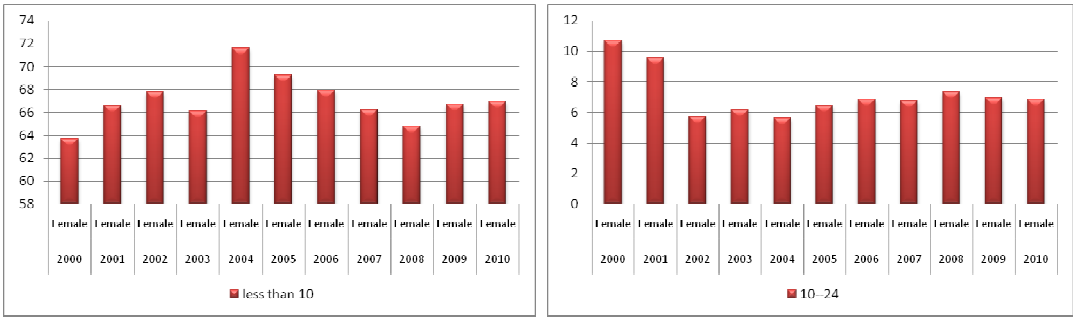
Distribution According to Company and Sector

Figure 6: Allocation of Male and Female in Different Size of Workplaces



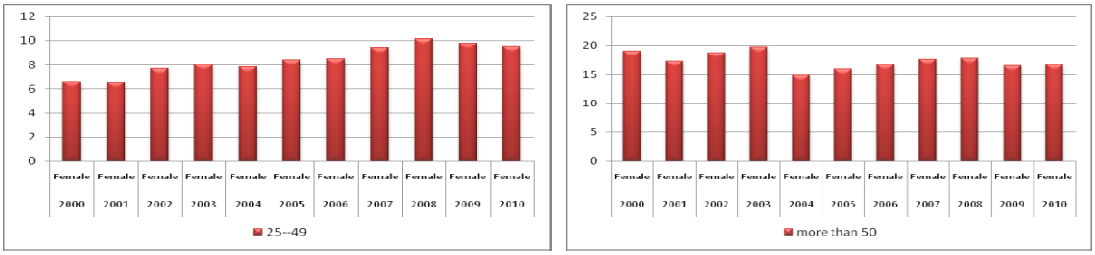
The sector and company profile where the female are employed are also of importance. As seen in the figure, employment for both males and females are concentrated in companies having less than 10 employees. In the below figure, the rates are examined in all scales of companies, with emphasis being upon the companies with less than 10 employees.

Figure 7: Female Employment Rate for Small Sized of Workplaces



According to figure 7, it is seen that 64 % of the female are employed in workplaces having less than 10 employees while the rate increased to 72 % in 2004. Again it declined to 65% in 2008 and finally following 2009, it began to increase. When the periods of 2001 and 2007 crisis are taken into consideration, the effects are to be obvious in the following years: 2002 and 2008. The impact of 2001 crisis was a decline in the rate of female labor force participation in workplaces having less than 10 employees while 2008 effect was a decline in the number of such workplaces. The impact of crisis differentiates according to the scale of companies. While the female labor force participation rate in workplaces having less than 10 employees increased in 2002; the number of workplaces having 10-24 employees followed a declining trend. Compared to the ones having less than 10 employees, the number of workplaces having 10-24 employees increased in 2008. In other words, these two different types of workplaces had a reverse relation. In order to examine this reverse relation, the number of male and female employees in different scales of workplaces has been studied and it has been found that there is a reverse movement in times of crisis.

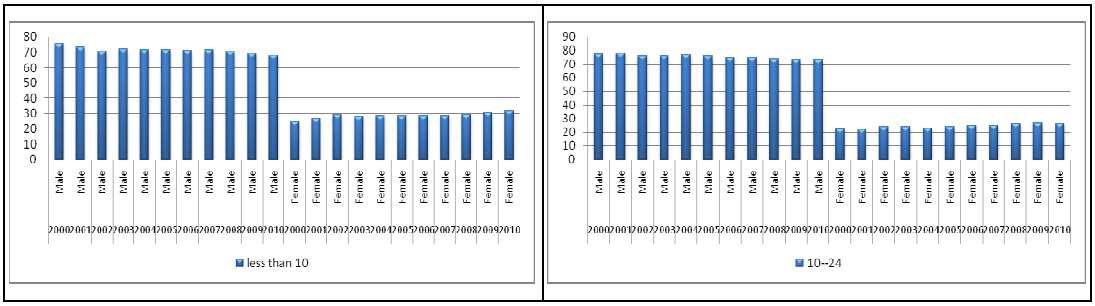
Figure 8: Female Employment Rate for Small Sized of Workplaces



Women workers in workplace with more than 25 employees have shown an increase after periods of crisis. Thence, the repercussion on the women's employment is distinguishable by depending on size of firms in the times of crisis.

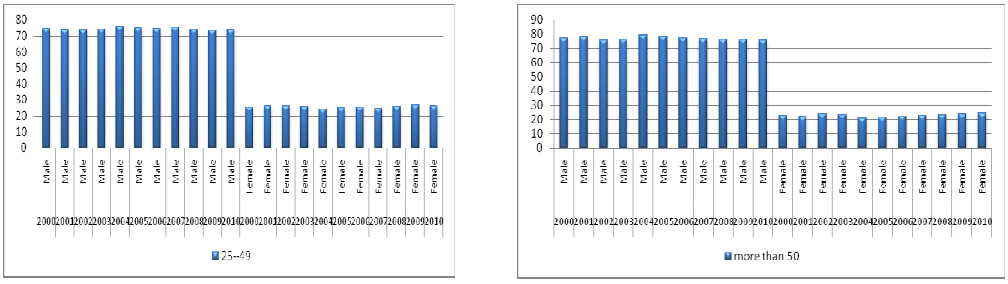
The percentage of working women in that establishment is denoted by the above graphs and besides, the following graphs give us the proportion of women and men workers in a particular arrogance size.

Figure 9: The Proportional Dispersion of Female and Men Employment within Scope of Workplaces that Incorporates less than 10 or etween 10-24 Workers by Years



The counter demeanour between women and men workers is beholded in companies that embodies less than 10 labourer. For instance, whereas women employees is in highest rank, the ratio of men' reaches rock bottom. A similar situation is also regarded in 2008. It is observed that in crisis period, women employment rate is incorporated in upward trend on firms which recuited less than 10 proletarian.

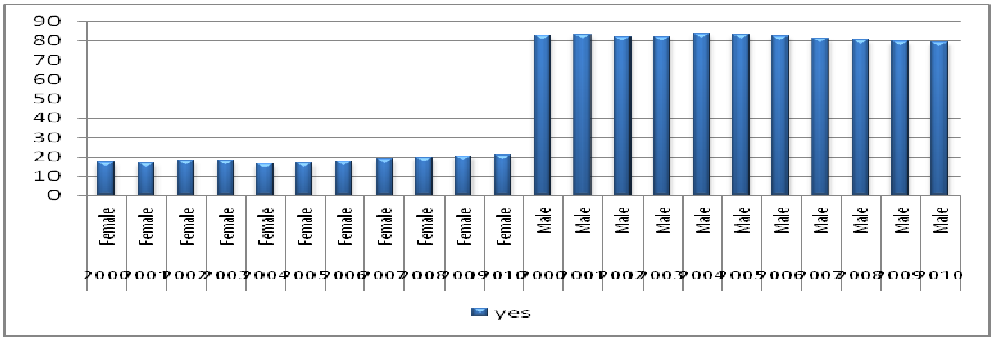
Figure 10: The Proportional Dispersion of Female and Men Employment within Scope of Workplaces that incorporates 25-49 and more than 50 Workers by Years



4. SHADOW EMPLOYMENT

In the light of the empirical evidences, congestion of men breadwinner that enrolled in a social security institution is conspicuous. The undermentioned figurations demonstrate the fluctuation of women employment at the stage of recession.

Figure 11: The Proportional Dispersion of Women and Men Employment According to State of Social Security Registration



5. OCCUPATIONAL CONFIGURATION

The regarded distribution of employment by vocational clusters, occupational configuration is pointed out within the context of gender. Although 15 percent of men is part of lawmaker, senior executive, general manager and learned profession groups, only 10-12 percent of women is engaged in these predicaments.

Figure 12: Ratio of Legislators, Senior Officials and Managers and Professionals For Female and Male Workers between 2000-2010

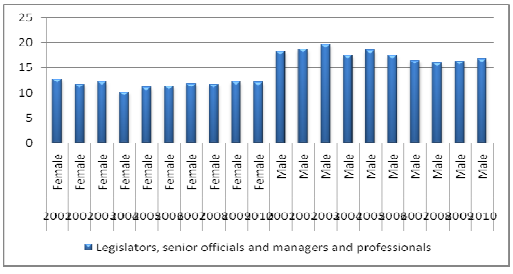
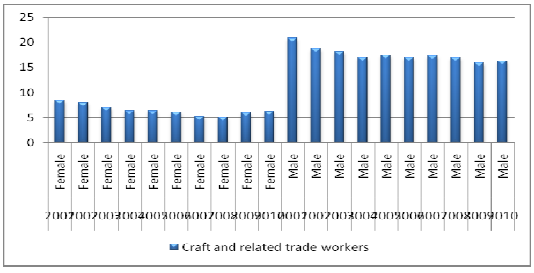


Figure 13: Ratio of the Craft and Related Trade Workers for Female snd Male Workers Between 2000-2010



The distinction of women and men that hold a position related to work of art ıs about 10 percent.

Figure 14: Ratio of the Plant and Machine Operators and Assemblers for Female and Male Workers between 2000-2010

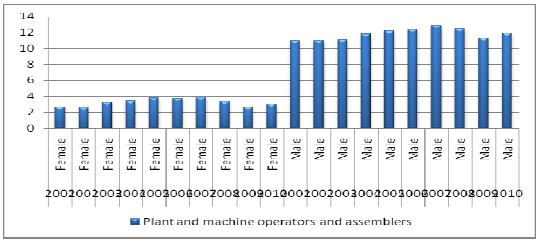
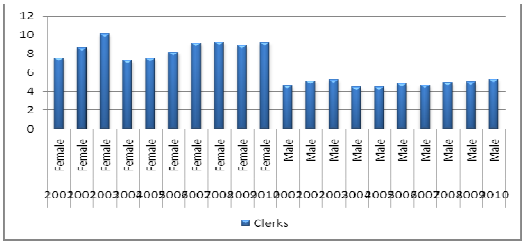


Figure 15: Ratio of the Clerks for Female and Male Workers between 2000-2010



The most of the women opt for engaging in customer and office services in contrast with men. The other sphere of activity is qualified agriculture and livestock, hunting, sylviculture.

Figure 16: Ratio of the Skilled Agricultural and Fishery Workers for Female and Male Workers between 2000-2010

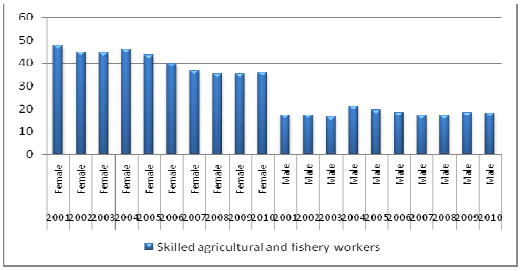


Figure 17. Ratio of the Technicians and Associate Professionals

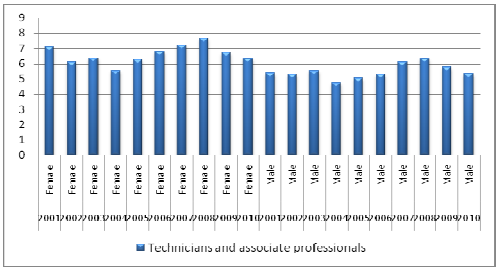


Figure 18: Ratio of the Service Workers, Shop and Market Sales Workers for Female and Male Workers

On the other side, men proles have the preponderant subsistence in all occupational groups by the means of gender. The following figures show us the employment area that women have relative augmentation.

Figure 19: Ratio of the Female and Male Workers between Legislators, Senior Officials and Managers and Professionals

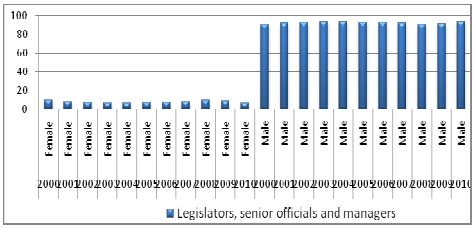


Figure 20: Ratio of the Female and Male Workers between Craft and Related Trade Workers

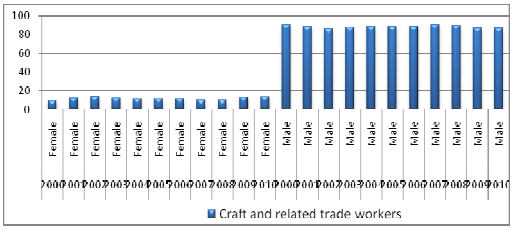


Figure 21: Ratio of Workers by Gender between Plant and Machine Operators and Assemblers

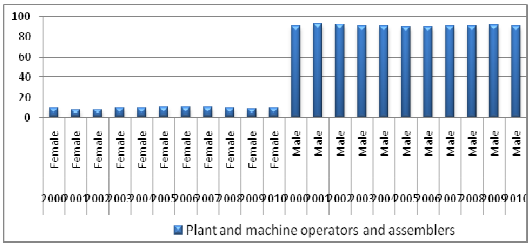


Figure 22: Ratio of Workers by Gender between Clerks

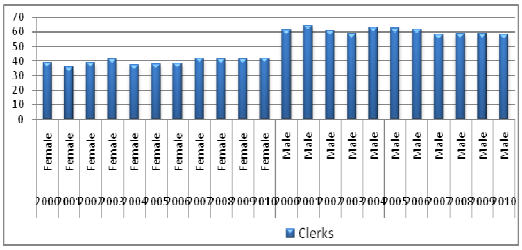


Figure 23: Ratio of Workers by Gender between Skilled Agricultural and Fishery Workers

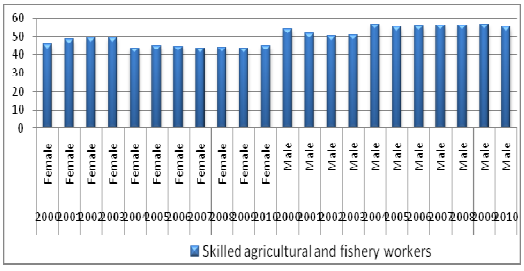


Figure 24: Ratio of workers by Gender between Technicians and Associate Professionals

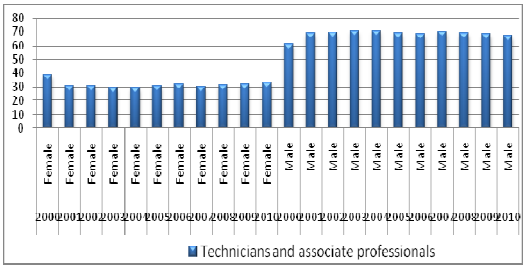


Figure 25: Ratio of the Female and Male Workers between Service Workers, Shop and Market Sales Workers

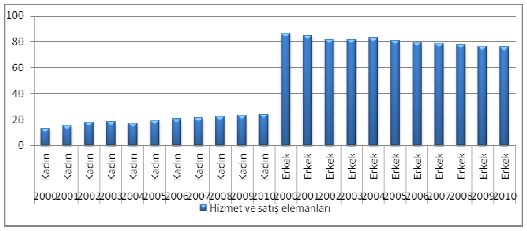
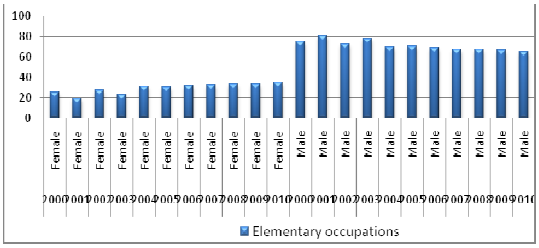


Figure 26. Ratio of the female and male workers between Elementary occupations.



While all things considered, men are provided high employment occasions (nearly 80 percent) but the otherwise, women have opportunity to usuance only on particular functions.

6. CONCLUSION

The aim of this study to investigate the structural transformation of female employment and concordantly, it incorporates into the survey results obtained from Turkish Statistical Institute for the period 2000-2010. In the light of these findings, it is not garbled to express that labor force participation of women is not catched up desired level even today (nowadays at around 35-40 percent) and there has not been meritorious increment in female employment after severe economic crisis.

Although in literature researches it is also stated that U-shaped curve switched direction to its positive side, nevertheless such picture is out of question after slump.

The majority of women have been cultivating as unpaid family workers in agricultural sector. Whilst along with industrialization men power is primary workforce in the labor market, women are repressed to that is secondary. In conjunction with penetrative educational level of women, there are carried with exalted LFPR of women in countries that have considerable welfare level.

REFERENCES

Bildirici, M. (2007) İşsizlik Sorunsalı ve Gaziantep İçin Sonuçlar, TEK Kongresi, Gaziantep.

Bildirici M. (2010), Osmanlı İmparatorluğu ve Türkiye Cumhuriyetinde İstihdamın Genel Özellikleri: 1908-2008, İçinde: Nevin Coşar, Melike Bildirici (derleyen) Tarih, Siyasi, Sosyal Gelişmelerin Işığında Türkiye Ekonomisi*;* 1908-2008, Ekin Yayınevi, Bursa.

Durand, J.D. (1975) The Labor Force in Economic Development, Princeton: Princeton University Press.

Goldin, C. (1995) The U-Shaped Female Labor Force Function in Economic Development and Economic History. İçinde: T.P. Schultz (derleyen). Investment in Women's Human Capital, Chicago: The University of Chicago Press.

Kottis, A.P. (1990) Shifts Over Time and Regional Variation in Women's Labor Force Participation Rates in a Developing Economy. Journal of Development Economics, 33: 117-132.

Mincer, J. (1985) Intercountry Comparisons of Labor Force Trends and of Related Developments: An Overview, Journal of Labor Economics, 3(1), Kısım 1: S1-S32.

Pampel, F.C. ve K. Tanaka (1986) Economic Development and Female Labor Force Participation: A Reconsideration. Social Forces, 64(3): 599-619.

Psacharopoulos, G. ve Z. Tzannatos (1989) Female Labor Force Participation: An International Perspective. World Bank Research Observer, 4(2): 187-201.

Psacharopoulos, G. ve Z. Tzannatos (1991) Female Labor Force Participation and Education. İçinde: G. Psacharopoulos (derleyen) Essays on Poverty, Equity and Growth, Oxford: Pergamon Press, Dünya Bankası için.

Schultz, T.P. (1990) Women's Changing Participation in the Labor Force: A World Perspective. Economic Development and Cultural Change, 38: 457-488.

Schultz, T.P. (1991) International Differences in Labor Force Participation in Families and Firms, Economic Growth Center Çalışma Raporu, No. 634, New Haven: Yale University.

OECD (2005) : *OECD Employment Outlook*, OECD, Paris, 2005.

Tansel A. (2002) İktisadi Kalkınma ve Kadınların İşgücüne Katılımı: Türkiye'den Zaman Serisi Kanıtları ve İllere Göre Yatay Kesit Kestirimleri. ERC Working Papers in Economics 01/05T.

Bildirici, M. (2007), İşsizlik Sorunsalı ve Gaziantep İçin Sonuçlar, TEK Kongresi, Gaziantep, Ekim.