The Future of Budgetary Allocation to Sports Sector in Pakistan: Evidences from Autoregressive Integrated Moving Average Model

Anwar Hussain[*], Asif Farid[**], Shah Hussain[***] & Sajid Iqbal[****]

Abstract

The study forecast Public Sector Development Program (PSDP) allocation to sports sector upto 2020 in Pakistan, utilizing time series secondary data ranging from 1988 to 2010, taken from official documents of the Ministry of Sports, Islamabad. For the analysis of the data, descriptive statistics and Autoregressive Integrated Moving Average (ARIMA) model has been applied. The findings revealed that there existed extreme fluctuations in these allocations during 1988-2010, showing uncertainty in these allocations. Further, the allocation to sports sector in PSDP will be Rs.120.082 million, Rs.124.113 million, Rs.128.349 million and Rs.134.711 million in 2013, 2015, 2017 and 2020 respectively. It is recommended that there should be a sustained growth in these allocations so as to remove the uncertainty component. There should be public private partnership in the sports sector of Pakistan which will not only improve the projects life in sports sector but will also add to incurring operation and maintaining costs of the schemes after its construction.

Keywords: Budgetary Allocation, Sports Sector, Autoregressive Integrated Moving Average Model

Introduction

Sports not only reinforce human capital in all over the world but also play its role in education, health and all spheres of daily life. The philosophy conveyed through sports helps develop knowledge; build up skill, insert motivation, enhance competition and leaning towards personnel efforts. Sports is an area of human activities that greatly contributes to characterize interests of the masses and has vast

[*] Dr. Anwar Hussain, Research Economist, Pakistan Institute of Development Economics (PIDE), Islamabad. Email: hello2anwar@yahoo.com
[**] Asif Farid, Research Officer in the Ministry of Commerce, Govt. of Pakistan
[***] Shah Hussain, MPhil Scholar, University of Hazara, Haripur Campus
[****] Sajid Iqbal, BS Economic Student, Quaid-e Azam University, Islamabad

prospective for bringing them together, reaching out to all, regardless of age groups, social origin or religious classification. In addition to improving the health of the masses, sports have an educational dimension and play a social, cultural and recreational role. The societal role of sports also has the potential to supplement Pakistan relations with rest of the world, particularly with India.

Sports have a greater potential and positive image than any other social activity for health-enhancing physical actions. Unfortunately, the true potential of the sports have not yet been recognized to foster physical, social and cultural activities in Pakistan. This sector has been un-utilized and needs to be developed.

In the past the development analysts in Pakistan did not pay due attention to the social problems and the role of Sports Sector in the development process. They focused primarily on realizing high economic growth and neglected the task of providing social necessities. Such policies have failed to give sound basis for the economic revival. Recent unsustainable economic growth and social underdevelopment in Pakistan are the outcome of such ineffective development policies. Not only in Pakistan but in the Third World also, the failures of the development policies on precisely the same because these non-economic variables e.g., the role of sports towards development and moderation was intentionally or unintentionally excluded from the analysis.

For sustainable economic development, it is necessary that all sectors of the economy maintain smooth and sustainable growth especially the social sectors of the economy. It is worth noticing that expenditure on social services is very low i.e. less than 3 percent of GDP in Pakistan as compared to other countries of South Asia (India is spending more than 6 per cent of its GDP on social services).

Table 1: Expenditure on Social Services Including Sports as Percentage of GDP

	Allocation for Sports (Rs. Million)	Sports Allocation % of GDP	Health Exp. % of GDP	Education Exp % of GDP
2000-01	0.20	-	0.7	1.6
2001-02	222	-	0.7	1.9
2002-03	74	-	0.7	1.7
2003-04	434	-	0.6	2.1
2004-05	209	-	0.6	2.1
2005-06	329	.004	0.5	2.2
2006-07	365	.004	0.6	2.4
2007-08	426	.004	0.6	2.4

2008-09	140	.001	0.5	2.1
2009-10	200	.001	0.5	2.0

Source: Economic Survey 2009-10

The above table indicates that Pakistan's record in the provision of basic services is not upto the mark which is a major obstacle to human development in the country. India's expenditure on social services in 2008-09 was 6.72 per cent of its GDP. Germany is spending 25 per cent of its GDP on social services that include education, sports, arts, culture and health facilities. France is spending 23 per cent of its GDP on social services.

The status of Pakistan in South Asia and among the globe is not satisfactory and almost for all the years, the human development index is low comparatively. This has been showed in Table 2.

Table 2: Human Development Index at Pakistan, South Asia and World Level

Year	Pakistan	South Asia	World
1980	0.311	0.315	0.455
1985	-	0.356	0.486
1990	0.359	0.387	0.526
1995	-	0.415	0.554
2000	0.416	0.440	0.570
2001	-	0.445	0.575
2002	-	0.451	0.581
2003	-	0.459	0.587
2004	-	0.470	0.594
2005	0.468	0.481	0.598
2006	0.471	0.489	0.604
2007	0.481	0.499	0.611
2008	0.484	0.504	0.615
2009	0.487	0.510	0.619
2010	0.490	0.516	0.624

Source: UNESCO Institute for Statistics (2010)

The important point to note here is that the strategy to be developed is not simply to reproduce what other countries in our region and outside

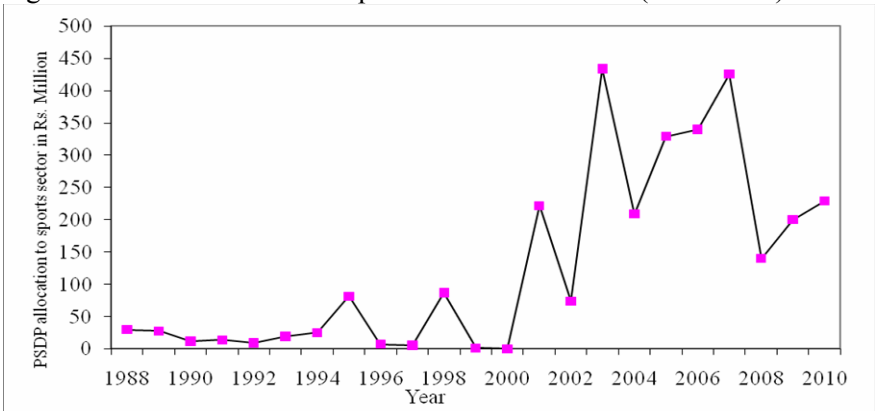
have done, but is to intelligently adapt "best practices" from successes of others and mold these to suit ground realities in Pakistan as well as the rapidly changing dynamics of the sports industry globally.

Sports Cities and sports institutions of modern technology in metropolitan areas on international standard equip with all facilities should be developed not only to attract foreign sports events in Pakistan but also to provide a conducive environment to our local players at lower rates. There is a proposal to establish Academies at Islamabad as well as the 04 Provincial Headquarters for the promotion of all popular games through a phased programme. Steps are being taken to establish a Sports Academy at Islamabad in the first instance. The purposes of the academies will be to increase players' productivity through education, on-the-job training, skill up-gradation and dissemination of new knowledge and latest techniques. Measures are also to be taken to improve physical infrastructure and ensure that the players are educated and are aware of all the challenges and requirements. Resources should be utilized meticulously to avoid wastage. Incentives should be provided to talented sportspersons by providing them appropriate job opportunities and recognition of their achievements.

Looking over the history of public sector development program (PSDP) allocation to sport sector in Pakistan since 1988, it is clear that severe ups and downs have taken place in these allocations. The allocation has been cut down drastically by 7.5% and 57.9% in 1989 and 1990 respectively. The allocation has been enhanced from Rs.11.6 million in 1990 to Rs.13.9 million in 1991 thus showing 19.1% increase in the allocation to sports sector. The allocation enhanced successively in 1993, 1994 and 1995 by 107.9%, 30.3% and 220.7% respectively. The allocation for the next two years cut down by 90.8% and 23.8% respectively. A drastic change occurred in 1998, in which the allocation has been enhanced to Rs. 86.88 million i.e. 1421% increase in the allocation. But the allocation in 1999 cut down to only Rs.1.3 million i.e. 98% reduction against the last year. The allocation further cut down to Rs.0.2 million in 2000. In the 2001, the allocation enhanced to Rs.221.7 million but further falls to Rs. 74 million in 2002. The PSD allocation to sports sector in 2003, 2004, 2005, 2006 and 2007 was Rs.433.7 million, Rs.209.1 million, Rs.329.1 million, Rs. 340 million and 425.8 million respectively. The allocation has been cut down by 67.1% in 2008 and then enhanced by 42.9% and 14.5% in 2009 and 2010 respectively. These ups and downs are presented in Figure 1. The results further explore imbalances in allocations to sports sector in different time periods. One major obstacle which has stood in the way of establishing a sound, efficient and developed sports culture to be a part of sustainable

economic development is the financial constraint. A persistent and gradual decline in the expenditure on sports since 2005-06 and onward is the fundamental cause of underdevelopment of this Sector.

Figure 1: PSDP allocation to sports sector in Pakistan (1988-2010)



Source: Official documents, Ministry of Sports, Islamabad

There has been sharp decline in the expenditure on Sports Sector i-e Rs. 329.073 million allocated in the year 2005-06 was decreased to Rs. 140 million in the year 2008-09. This is the reason that this Sector was unable to contribute its share in establishment of an efficient sports culture and its role in the economic development. The prevailing declining standards of sports in Pakistan will lead to social imbalances and loss in productivity. Therefore, this sector deserves special attention of our policy makers.

One major obstacle which has stood in the way of establishing a sound, efficient and developed sports culture to be a part of sustainable economic development is the financial constraint. A persistent and gradual decline in the expenditure on sports since 2005-06 and onward is the fundamental source of underdevelopment of this sector. Some other factors which still continue to be major hindrances are that the existing facilities of sports are not up to the mark and very few stadia or gymnasia with proper facilities exist in the country, which too are not of international standard and with lesser income generation capacity. The plan to put emphasis on the development of less enhanced parts of the sector was unsuccessful due to resource deficiency. Most of the projects could not be completed with in prescribed time framework because of delay of funds and grants. Lack of research, professional facilities and low budgetary allocations, are some of the causes of under-development of this sector besides the educational institutions at grassroots level which are supposed to be sports nurseries have almost ceased to produce

talented sportsmen. Absence of community participation and unregulated private sector is another factor.

Poor infrastructure and social under-development of large section of the society created severe problems for economic revival. Since its independence in 1947, Pakistan development policies have focused primarily on realizing high economic growth and only incidentally on the task of providing social necessities. Such a process has given rise to a structure of production and distribution, which has been only indirectly responsive to social goals.

The Ministry has the primary responsibility of promotion and development of sports in the country comparable to the standard prevailing internationally and its due role in economic development and prosperity of our nation. The Sports sector of Pakistan, inspite of many incentives to the players offered by the government over the past many years, and best efforts of the Ministry of Sports, has fallen short somewhat of high expectations that have been placed upon it, due to financial constraints. The declining standard of sports in the country has deeply concerned the government to take remedial measures and bring about drastic changes which may remove flaws and bottlenecks for smooth functioning of sports institutions and revival of the booming past of sixties.

Economic analysts say that pressure is mounting on Pakistan to meet the PSDP targets, which the country has missed so far, including capping its budget deficit, introducing tax reforms and removal of subsidies, especially in its troubled power sector. The Government has already imposed a sharp cut on the PSDP allocation for Sports for the year 2010-11. The prevailing economic situation and recent developments in the region regarding Terrorism, it is expected that the government will impose a further cut in the PSDP allocations. The Sports allocation in the PSDP 2010-11 is Rs. 229.647million. This amount is insufficient to meet the financial requirements of the 46 Sports development projects. Therefore, in these circumstances it will not be possible for this sector to play its due role in the sustainable economic development. A long-term vision operationalised through a series of concrete measures is required for the promotion of sports in Pakistan.

Going through the literature, it is clear that there are no detailed studies conducted in the field of sports and particularly relevant to forecasting sports budget. In Pakistan, most probably, there is no single study conducted about the issue under consideration. Some studies from all over the world are briefly given chronologically as under:

Siegfried and Zimbalist (2002) assessed the impact the expenditures of sports on the local economy. His findings revealed that

the players send their earnings to the countries where they live. Further, they identified the simulative effect of sports expenditures by over 400%. Malcolm (2003) forecasted the demand function for tourist product in Jamaica using error correction model, structural time model and autoregressive moving average models. His findings revealed that the Jamaica has a mature tourism product. The inclusion of tourism density ratio improved the error correction mechanism model. He further recommended the diversification and promotion of the product.

Baade (2003) studied the subsidies for professional sports which changed from time to time in Europe and United States. He observed the public-private partnership for facilitating sports in the study area. The subsidies and taxes can play its role in promoting professional sports.

Jagemann (2003) observed that in our society sport plays important functions and is indeed indispensable. It offers opportunities for physical activity in a world where physical activity is increasingly diminishing; it promotes good health and well-being (when pursued in moderation); and it provides a means of social contact and ample opportunity for intensive experiences. At the same time, however, sport can be a considerable cause of damage to nature and the environment.

Dimitrov *et al* (2006) proposed that sports is an important factor of economic growth and it had generated value-added of 407 billion euros in 2004, accounting for 3.7 % of EU GDP, and employment for 15 million people or 5.4 % of the labor force.

European Commission (2007) suggested that sports is active and fast growing sector with underestimated macro-economic impacts, and can contribute to the desirable economic growth. It can play its role in regional development, urban regeneration and rural development. Sports being a better source of tourism can encourage the up gradation of infrastructure and the materialisation of new partnerships for financing sports and leisure facilities. The Commission further described that practice of sports, sports facilities and sports events all have a significant impact on the environment.

Bairner (2009) examined a case study in Northern Ireland in connection with sports and rooted in personal experience, the paper found alternative ways in which intellectual activities can affect the world of sports. It is argued that only through engagement with organic intellectuals who exercise authority within the subculture of sports can critical sociologists hope to influence sporting practices.

Barclay (2009) predicted the costs and benefits of mega sporting events and observed that some events in sports are exaggerated. Molina, Arroyave and Callejas (2010) observed that sports is an important sector of an economy. They observed that there is a need for valuation of sports

in Colombia and suggested Satellite Accounts methodology for valuing sports. They developed this theoretical model for this purpose and also design a circular flow of income and product approach.

Avīze (2010) studied that there is a trade-off between quality of life and sports expenditures. Reduction in the sports expenditures lead worsening the quality of life and ultimately the quality of society as well. Syed (2011) pointed out that all political leaders and political parties in Pakistan have treated sports only as a source of entertainment with the results that sports never received the government level support that it deserved and has failed to play its vital role in the transformation towards moderation of our society. Chinese political hierarchy realized this and less than two decades they have not only become the world's top sporting nation but have successfully channelized their youth towards a more productive, constructive and disciplined lifestyle.

Friedman and Andrews (2011) studied that the public expenses of the Nationals Park stadium exceeded $611 million, which is the most generous stadium subsidy in the United States.

The above studies focused on various aspects of sports sector. in case of Pakistan, to attain sustainable growth, the government should focus on enhancing sports and health opportunities and create a suitable environment for research and development. The presents study contributes to determine the path of budgetary allocation to sports sector in future.

Materials and Methods

The present study is based on time series secondary data ranging from 1988 to 2010. The data on Public Sector Development Program (PSDP) allocation to sports sector in Pakistan has been obtained from official documents of the Ministry of sports, Islamabad. For the analysis of the data, descriptive statistics and Autoregressive Integrated Moving Average (ARIMA) model has been applied. The ARIMA model combines two specification i.e the autoregressive process and moving average process. The following form of the ARIMA model was used:

$$Yt = bo + \gamma 1\ Yt\text{-}1 + \gamma 2\ Yt\text{-}2 + \ldots\ldots\ldots + \gamma p\ Yt\text{-}p + \varepsilon t + \eta 1\ \varepsilon t\text{-}1 + + \eta 2\ \varepsilon t\text{-}2 + \ldots\ldots\ldots\ldots + + \eta q\ \varepsilon t\text{-}q \quad (1)$$

Where Yt is the variable being forecasted, p is the number of past values used, q is the number of past values of the error term used and γS and ηS are the coefficients of e the autoregressive process and moving average process respectively. The model in eq. (1) is ARIMA(p,q). also incorporating the order of differencing, the model is then called as ARIMA (p,d,q). Where 'p' is the order of autoregressive scheme (the

number of past values used), 'd' is the order of differencing while 'q' is the order of moving average (the number of past values of the error term used)

To determine the parameters of ARIMA model, the Augmented-Dicky Fuller (ADF) test and regression analysis have been used. To determine the order of differencing the ADF test has been used.

To determine the order of autoregressive and moving average, various equations have been estimated and those autoregressive and moving average terms have been selected which were statistically significant. The results were also confirmed by autocorrelation function and partial autocorrelation function. The forecasting made through ARIMA has been extended upto 2020.

Furthermore, for deriving the regression results, Eviews is used while for forecasting, the Minitab has been used.

Results and Discussion

The PSDP allocations to sports sector are not according to the requirements and are quite low. The sample statistics given in Table 1 indicates that the average allocation to sports sector in Pakistan is Rs.127.08 million, while the maximum and minimum allocation is Rs.433.69 million and Rs.0.20 million respectively.

Table 3: Descriptive Statistics

Statistics	PSDP allocation
Mean	127.0751
Median	74.00400
Maximum	433.6980
Minimum	0.200000
Std. Dev.	142.9614
Observations	23

Source: Author's calculations

The project the future of PSDP allocation to sports sector in Pakistan, the Autoregressive Integrated Moving Average (ARIMA) model is applied. To finds the order of differencing, the ADF test is applied and the results are given in Table 4. The results indicate that the variable PSDP is not stationary at level and it has been made stationary after taking its first difference. So, the order of differencing in ARIMA model is 1.

Table 4: ADF test results for stationarity (including both intercept and trend)

Variable	I(0)		I(1)		Results
	Test Statistic	Critical value	Test Statistic	Critical value	
PSDP	-3.9765[0][1]	-4.4415	-9.08950[0]	-4.4691	I(1)

(i) Figures in square brackets besides each statistics represent optimum lags, selected using the minimum AIC value.
(ii) The critical value is at 1%, 5% and 10% level of significance.

To determine the appropriate order of autoregressive and moving average, various equations have been tried in which the following equation was found suitable, which yield the appropriate order of autoregressive and moving average. The results are given in Table 5. The results show that for forecasting PSDP, the appropriate order of autoregressive and moving average are 1 and 2 respectively.

Table 5: Order of Moving Average and Order of Autoregressive

Dependent Variable: PSDP				
Sample(adjusted): 1989 2010				
Backcast: 1987 1988				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	0.910699	0.097200	9.369297	0.0000
MA(1)	-0.947338	0.085244	-11.11319	0.0000
MA(2)	0.898566	0.106304	8.452819	0.0000
R-squared	0.611767	Mean dependent var		131.4900
Adjusted R-squared	0.570900	S.D. dependent var		144.7120

Based on the above derived results, the appropriate model for forecasting is ARIMA (1, 1, 2). The model results are given in Table 6. The results show that in 2012, the PSDP allocation to sports sector would be Rs.119.18 million associated with lower and upper 95 % confidence intervals of -77.141 and 315.505 respectively. The similarly the PSDP allocation to sports sector in 2013, 2015, 2017 and 2020 would be Rs.120.082 million, Rs. 124.113 million, Rs. 128.349 million and Rs. 134.711 million respectively.

Table 6: PSDP forecasting with ARIMA (1, 1, 2)

YEAR	Forecast	95 % Confidence interval	
		Lower	Upper
2011	125.203	-68.677	319.084
2012	119.182	-77.141	315.505
2013	120.082	-141.589	381.753
2014	122.02	-203.897	447.937
2015	124.113	-256.966	505.192
2016	126.229	-303.2	555.659
2017	128.349	-344.542	601.241
2018	130.47	-382.217	643.156
2019	132.59	-417.018	682.199
2020	134.711	-449.491	718.912

Source: Author's calculations

Conclusion and Recommendations

Based on the results derived, it is concluded that presently the average PSDP allocation to sports sector is Rs.127.08 million during 1988-2010, which is quite minimum showing the negligence of this sector. Further there existed sever fluctuations/imbalances in these allocation during 1988-2010, showing uncertainty in these allocations. The results further reveal that the allocation to sports sector in PSDP will not be increasing outstandingly and in 2013, 2015, 2017 and 2020 these would be Rs.120.082 million, Rs.124.113 million, Rs.128.349 million and Rs.134.711 million respectively.

It is recommended that the sports sector should be focused on in terms allocating more funds in PSDP so as to make this sector sound and competitive. Further, there should be a sustained growth in these allocations so as to remove the uncertainty component in Pakistan. There should be public private partnership in the sports sector of Pakistan which is common practice in most of other countries of the world. This will not only improve the projects life in sports sector but will also add to incurring operation and maintaining costs of the schemes after its construction.

References

Avīze, N. R. (2010). *Cutting sports expenditures worsens quality of life*. Retrieved from http://www.eurotopics.net/en/archiv/results/archiv_article/ARTICLE71129-Cutting-sports-expenditures-worsens-quality-of-life on June 8, 2010.

Baade, R. A. (2003). *Evaluating Subsidies for Professional Sports in the United States and Europe: A Public-Sector Primer*. Oxford university press. 19(4): 585-597.

Bairner A. (2009). Sports, Intellectuals and Public Sociology Obstacles and Opportunities. *International Review for the Society of Sports*. 44:115-130

Barclay, J. (2009). Predicting The Costs And Benefits Of Mega-Sporting Events: Misjudgment Of Olympic Proportions? *Economic Affairs*. 29(2): 62–66.

Box, G. and Jenkins, G. (1970). *Time series analysis: Forecasting and control*, San Francisco: Holden-Day.

Brandt, J.A and D.A. Besslet (1981). Composite forecasting: An application with U.S. hog prices. *American Journal of Agriculture Economics*. 63(1): 135-140.

Dickey, D. A. and Pantula, S. (1987). Determining the Order of Differencing in Autoregressive Processes, *Journal of Business and Economic Statistics*. 5: 455-61.

Diebold, F.X. (2001) *Elements of Forecasting*. Thomson Learning, Australia.

Dielman, T. E. (1986). A Comparison of Forecasts from Least Absolute Value and Least Squares Regression, *Journal of Forecasting*. 5: 189-95

Dimitrov, D., C. Helmmenstein, A. Kleissner, B. Moser, J. Schindler. (2006). *Die makrookonomischen Effekte des Sports in Europa, Study im Auftrag des Bundeskanzleramts, Sektion Sports, Wein*.

Dougherty, C. (1992). *Introduction to Econometrics*, Oxford University Press, Oxford

Economic Research Service, USDA. Retrieved from http://www.ers.usda.gov/Briefing/wheat/wheatsupplyuse.htm On May 18, 2010.

European Commission Brussele (2007). White Paper on Sports, present by the European Commission. Retrieved from http://ec.europa/sport/white-paper/whitepaper8_en.htm on January 14, 2011.

Friedman, M. T and D. L. Andrews. (2011). The Built Sport Spectacle and the Opacity Of Democracy. *International Review for the Sociology of Sport* .46(2): 181-204.

Gujarati, D.N. and Dawn C. P. (2009). *Basic Econometrics*. Intl. McGraw-Hill.

Jagemann H. (2003). *Sports and Environment: Ways Towards Achieving the Sustainable Development of Sp[orts*. Conference by the 4th Pierre de Coubertin School Forum Arenzano (MUVITA).

Malcolm, O. N. (2003). *Tourism Maturity and Demand: Jamaica*. Work paper, Research Services Department, Research and Economic Programming Division, Bank of Jamaica.

Molina, A. R E. A. M. Arroyave and R. J. M. Callejas. (2010). The Economic Salience of Sports in Colombia: A Satellite Accounts Methodology. *Lecturas de Economía*. 72: 141-168.

Nachane, D. M. (2006). *Econometrics Theoretical Foundations And Empirical Perspectives*. Oxford university press, New Delhi.

Pierre de Coubertin (1863-1937), French Pedagogue and Historian, Founder of the Modern Olympic Games.

Pindyck, R. S. and D. L. Rubefeild. (1981). *Econometric Models and Economic Forecasts*. McGraw-Hill Inc.

Schwarz, G. (1978). Estimating the Dimension of a Model, *Annals of Statistics* 6: 461-4.

Siegfried, J. and A. Zimbalist (2002). A Note on the Local Economic Impact of Sports Expenditures. *Journal of Sports Economics.* 3(4): 361-366.

Studenmund, A. H. and H. J. Cassidy (1987). *USINF Econometrics: A Practical Guide*. Little, Brown and Company, Toranto.

Stock, J. H. and Watson, M. W. (2006). *Introduction to Econometrics* 2nd edn., Addison Wesley Upper Saddle River, NJ.

Syed, Z. H. (January 2011). Review of sports year 2010-VI. *The News*