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IMPACTS OF DARGAI DELAY ACTION DAM ON LAND PRICES IN DISTRICT PISHIN, BALOCHISTAN

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ABSTRACT

This research tried to find out the impacts of Dargai delay action dam (DDAD) on the land values of Tehsil Karezat, Pishin for 15 years (2000-2015). DDAD was built to irrigate nearby lands and restore water table. The dam work began in 1998 and completed in 2004. 200 households were randomly selected for survey. Data were gathered from respondents' using questionnaire and focus group discussions. Results showed that DDAD had substantial impact on land prices of Tehsil Karezat, Pishin. Further the land values showed great variation according to their nature and location. The values of land adjacent to roads had higher land prices as compared to lands further apart. Respondents with cultivated land values of more than 15 lakhs PKR/acre increased from 1% in the year 2000 to 64% in 2015. For uncultivated land, respondents with land values of 9 lakhs PKR/acre increased from 2 % in 2000 to 47% in 2015. The residential land also showed very high increase from 2000 to 2015. Results of the t-test also showed that the land values for all the three categories of cultivated, uncultivated and residential showed an increase in 2015 as compared to the year 200 with significance values of 0.00 level.

KEY WORDS: Delay action dam, Land prices, Pishin

1. INTRODUCTION

Excessive utilization of ground water has resulted in lowering of water table (Adams, 198; Bohlen & Lewis, 2009). The condition became worse as a result of current extended non-stop drought in last 6 to 7 years. The present condition of ground water is insufficient. The average shortage of water desk is 1-20 meter in step with annum in Pishin-Lora River (Wajidet al., 2013). Water shortage in Balochistan is greater than other provinces. There is not any shortage of land in Balochistan. The main hurdle in agricultural development in Balochistan is the non-availability of water for irrigation (Ashraf et al., 2007). The problem has been found out at federal as well as provincial level in Pakistan. Punjab province has constructed 32 dams for water storage (Ahmad & Khan, 1994). The dismal situation in Balochistan province additionally warrants development of dams for water storage. This strategy will help to save the dwindling apple orchards (Saeed et al., 2012; Kakaret al., 2016).

Balochistan province has built dams for storing water and these dams are called as “delay action dams” (Kahlown& Hamilton, 1994). Dargai Delay Dam (DDAD) is one of these 32 dams. Few studies have discussed the importance of dams on increasing land values including the studies of Marchetti et al. (2019), Sovacool & Walter (2019), Olmstead et al. (2020) and Eslami et al. (2021). We had performed detailed literature review, but we were unable to come across a single research that had focussed on pre and post impacts of dams on land values of uncultivated, cultivated and residential properties. Therefore, in this study we focused our attention to study the impacts of DDAD on land values in Pishin. This program is called drought impact mitigation, recovery component (DIMRC) and is supported by ADB. The scheme became at the beginning designed to skip flood water of Dargai River into Gharhki River via the development of spillway, however it turned into determined in the course of the implementation of the scheme that spill water of Dargai manda couldn't be accommodate by Ghrakhai River. DDAD helps in irrigating nearby fields and also helps in water table recharge. This dam has capacity of storage of up to 1000 acre feet. The water of the dam is useful for neighborhood farmers and leads to socioeconomic impacts on the population (Pishin District Development Plan, 2011). This study highlights the importance of DDAD on land prices of Pishin. A general of 200 families had been surveyed through questionnaire. Yamane formula was used to calculate sample size (Yamane, 1967). A random sampling technique was used for choosing respondents. Focus group discussions were additionally carried out to have in-depth knowledge about effects of DDAD on land prices. Collected data were analysed through SPSS version 18 and MS Excel version 16. Paired samples-t test used to compare the land prices for 2000 and 2015. The results showed significant increase in land prices from the year 2000 to 2015. The land prices were relatively depending on its nature and places. The cultivated lands were higher land prices from uncultivated land. Similarly, the land prices beside the roads have higher land prices than land distant from roads.

2. MATERIALS AND METHODS

DDAD lies at a 50 km distance from Pishin (Figure 1). The dam was built for irrigation purposes and is of earth fill type. No negative impacts on the people of the area were noted in terms of dislocation of settlements and people. The height of the dam is about 38.5 feet with a length of spillway

of about 225 ft. The dam covers an area of 50 square miles with a storage capacity of 850 Acre Feet (Kakaret al., 2016). Census data of 1998 was used to come up with sample size (Jilani & Khair, 2016). Population of Pishin was 22,736 which include three, 244 families. Yamane formula was used to calculate sample size (Yamane, 1967). Primary data was gathered from the residents of the area. Questionnaire and focus groups discussion were used to collect data from respondents. Two hundred respondents were surveyed. Respondents were selected using random sampling technique

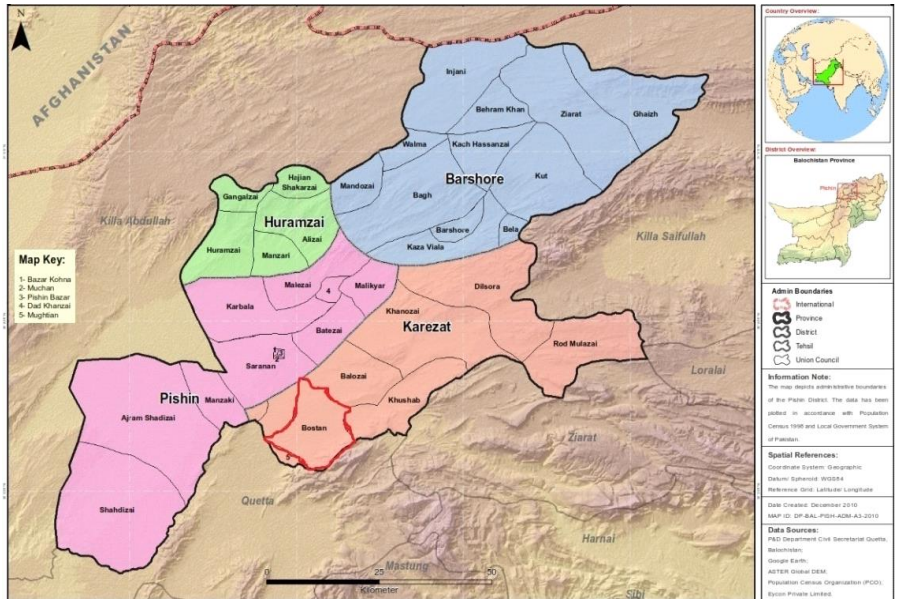

Fig. 1: Study area map

3. RESULTS AND DISCUSSION

Cultivated land prices inside study area for the years 2000 and 2015 also had been calculated. They were distributed into four categories, i.e., 1 to five, 5 to ten, 10 to fifteen and fourth one more than 15 Lakh rupees. According to the outcome in 2000, about 60% respondents replied that cultivated land prices ranged from 1-500,000 Pakistani Rupees (PKR) and 35% reported from 5-10,000,000 PKR. About 4% reported from 10-1,500,000 PKR. Only 1% replied for prices of more than 1,500,000 PKR. About 5% respondents replied from 1 to 5 Lakh rupees at the same time as 20% respondents replied back with five to ten Lakh rupees. The respondent having land prices from 10-15 Lakh rupees were 10%. Finally,

in 2015 majority of (64%) respondent spoke back with land prices more than 15 Lakh rupees per acre of cultivated land (Figure 2). The outcome indicates that the cultivated land prices in 2015 have substantially high in comparison to land prices in 2000.

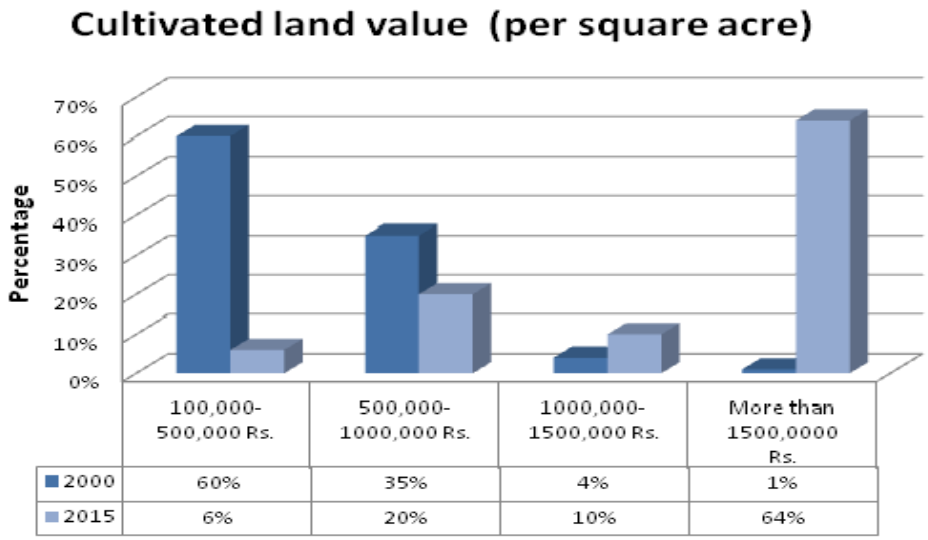

Fig. 2: Prices of cultivated land/acre for 2000 and 2015

T-test statistics for cultivated land value for 2000 to 2015 were also calculated. The outcomes show with 75.25 t-value, and its degree of freedom 199 and 0.00 significance (means highly significant) (Table 1). In the end null hypothesis was rejected and vice versa. The outcome indicated that in 2015 cultivated land prices had drastically improved compared to those in 2000. Studies of Sovacool et al. (2019) and Eslami et al. (2021) also conform positive impacts of dams on cultivated lands.

Uncultivated land prices in area had been compared for the two periods mentioned above. About 80% respondents reported in range of 1-300,000 PKR/acre. Only, 10% answered from 3-600,000 PKR. Around 8% were responded from 6-900,000 PKR and 2% answered with more than 900,000 PKR in 2000. Similarly, 26% respondent replied with uncultivated land prices from 1-300,000 PKR per acre in 2015. Respondents who replied with 3-600,000 PKR were 13%. Finally, 47.5% respondents responded with greater than 900,000 PKR/acre uncultivated land in 2015. This suggests that uncultivated lands prices had showed increase in prices during 2015 (Figure 3).

Table 1: Paired Sample T-Test values of cultivated land

Paired sample	Mean	Standard Deviation	Standard Error Mean	Confidence Level (95%)		T	Degree of freedom	2-tailed significance
				Lower	Upper			
Prices of cultivated land for 2000 and 2015	-2.630	0.494	0.035	-2.699	-2.561	-75.247	199	0.000

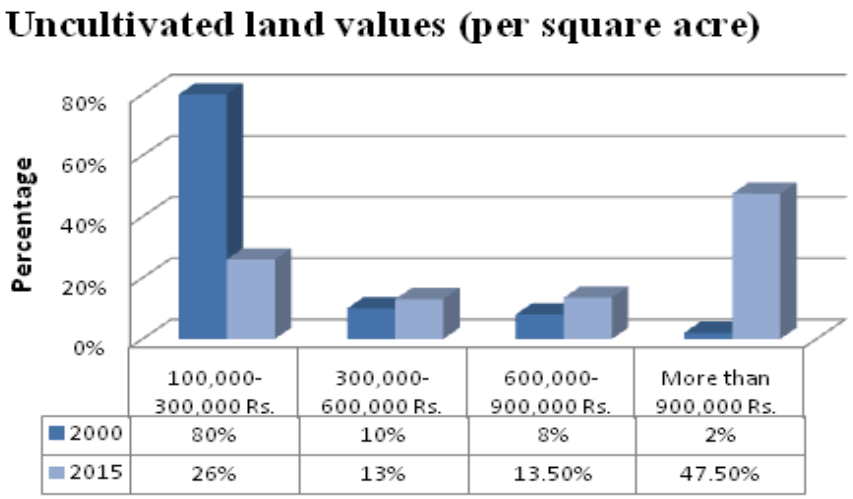

Fig. 3: Prices of Uncultivated land/acre for 2000 and 2015

Uncultivated land's t-value was 32.332 with a 0.00 significance (Table 2). In the end Null hypothesis was rejected and vice versa. The outcome indicates significant increase in uncultivated land prices in 2015 as were in 2000**.** About 54% respondents answered with land prices from 1-400,00 PKR. About 36% reported an increase from 4-800,000 PKR. Similarly, 8% respondents answered an increase from 8-1,200,000 PKR. Finally, only 2% responded with more than 12 Lakh rupees per acre residential land. Respondent who replied with land prices from 1-400,000 PKR in 2015 were 36%. About 5% respondents responded reported an increase from 4-800,000 PKR. Similarly, 42% respondent replied with land prices from 8-1200,000 PKR. Finally, the respondents answered with land prices above than 1200,000 PKR in 2015 were 17 %(Figure 4). The outcome indicates that residential land prices in 2015 were notably elevated as they were in

year 2000. Our results are in line with the studies of Rufin et al. (2019) and Marchetti et al. (2019).

Table 2: Paired Sample T-Test of uncultivated land

Paired sample						T	Degree of freedom	2-tailed significance
	Mean	Standard Deviation	standard Error Mean	Confidence Level (95%)				
				Lower	Upper			
Prices of uncultivated land for 2000 and 2015	-2.635	1.153	0.081	-2.796	-2.474	-32.332	199	0.000

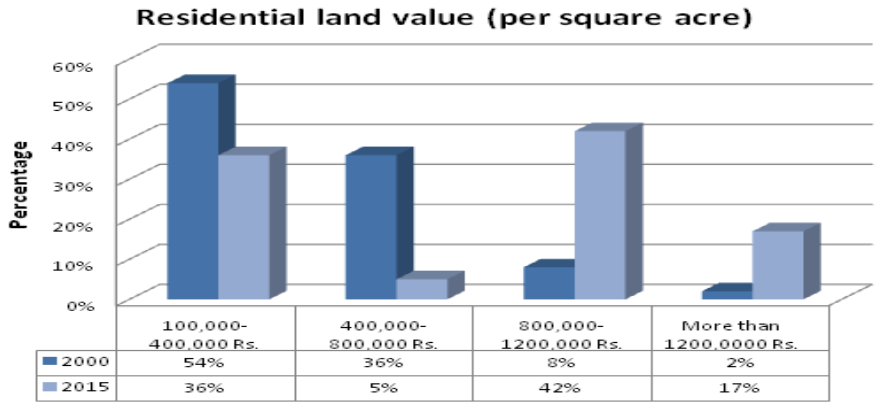

Fig. 4: Prices of Residential land/ acre

Residential land had t-test value of 23.06 with 0.00 significance (Table 3). In the end null hypothesis was rejected and vice versa. The result suggests that there has been major change in residential land prices afterward the installation of the dam inside the area. The commercial land prices have been correspondingly examined for years 2000 and 2015. In 2000 the respondent answered with land prices from 50-100 PKR /ft^2 were 48%. About 3% responded for land prices from reported from 100-150 PKR. 2% households reported to have land prices from 150-200 PKR /ft^2. In 2015 the respondents having commercial land prices from 50-100 PKR /ft^2 were only 5%. About 28% respondents replied with the land prices from 100-150

PKR /ft^2. Likewise, 32% responded with land prices from 150-200 PKR /ft^2. Finally, 35% respondents replied with having no commercial land within year 2015. Results display that the commercial land prices have drastically accelerated from 2000 to 2015 (Figure 5).

Table 3: Paired Sample T-Test values of residential land

Paired sample	Mean	Standard Deviation	Standard Error Mean	Confidence Level (95%)		T	Degree of freedom	2-tailed significance
				Lower	Upper			
prices of Residential land for 2000 and 2015	-1.705	1.046	0.074	-1.851	-1.559	-23.059	199	0.000

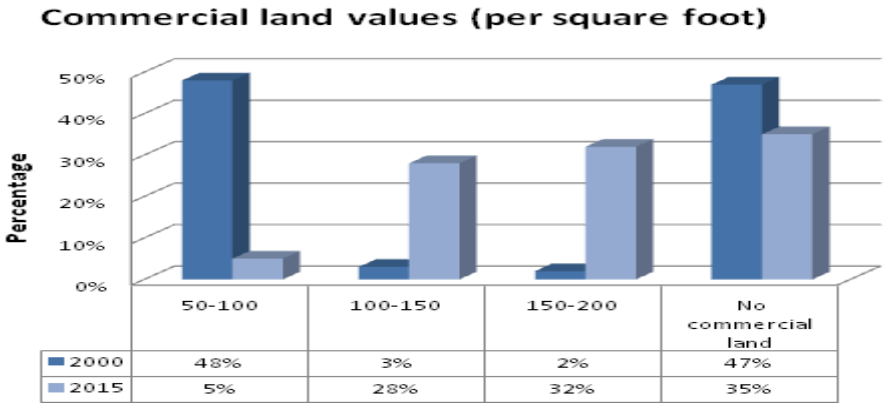

Fig. 5: Prices of Commercial land/ acre

T-test statistics was -5.465 with 0.000 significance. Therefore, null hypothesis was rejected and vice versa (Table 4). The outcome suggests commercial land value significantly multiplied. Commercial land prices in 2015 highly elevated in comparison to land prices within 2000. Residential land prices had been correspondingly compared form years 2000 to 2015. 92% responded with land prices ranging from 50-100 PKR /ft^2 in 2000. 8% replied with land prices from 100-150 PKR/ft^2. Respondents that replied with land prices from 50-100 PKR/ft^2 were 41.5%. Finally, 59.5% respondents spoke back with land prices from 100-150 PKR /ft^2 in 2015

(Figure 6). Results confirmed that during 2015 there has been a sizeable boom in the prices of residential lands. Study of Yousefi et al. (2019) also showed an increase of residential land values with construction of dams.

Table 4: Paired Sample T-Test values of commercial land

Paired sample						T	Degree of freedom	2-tailed Significance
	Mean	standard Deviation	Standard Error Mean	Confidence Level (95%)				
				Lower	Upper			
Prices of commercial land for 2000 and 2015	-0.605	1.566	0.111	-0.823	-0.387	-5.465	199	0.000

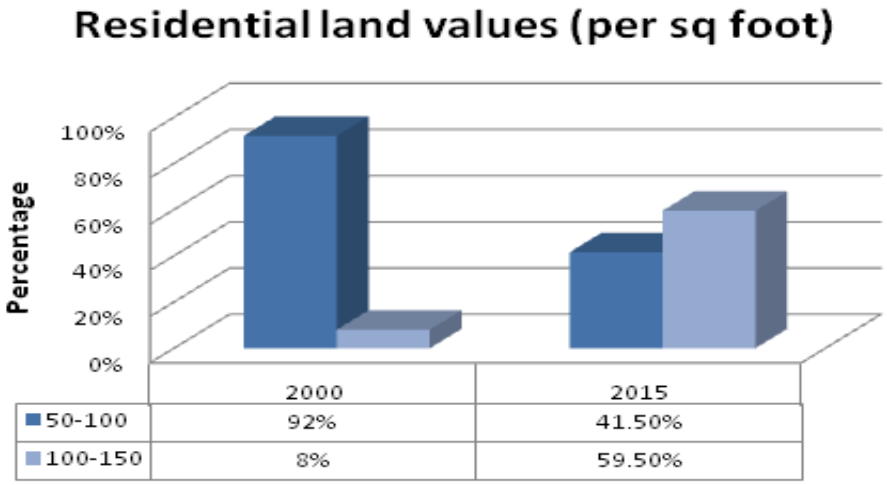

Fig. 6: Prices of Residential land / acre

T-test statistics was 48.653 with 0.00 significance (Table 5). In the end null hypothesis was rejected and vice versa. Results indicate that residential land prices in 2015 had been significantly increased because of access to amenities.

Table 5: Paired Sample T-Test values for prices of residential land

Paired sample						T	Degree of freedom	2-tailed Significance
	Mean	Standard Deviation	Standard Error Mean	Confidence Level (95%)				
				Lower	Upper			
Prices of Residential land for 2000 and 2015	-0.970	0.282	0.020	-1.009	-0.931	-48.653	199	0.00

4. CONCLUSION

This research makes available the relevant facts about the effects of DDAD on the land prices of Teshsil Karezat Pishin. Results show that the DDAD have significant effect on the land prices in study area. Land prices were dependent on nature and site of land. Almost all categories of the land showed a huge rise from 2000 to 2015. Land was used for different purposes land was not only use for agriculture and residential purpose but also used for commercial purpose in the study area. Prices of commercial land were much higher as compared to residential and agriculture land prices. Land that were close proximity to roads were used for commercial purposes. This research suggests policy action by the government to build delay action dams to ensure availability of water for the farmers.

5. ACKNOWLEDGEMENT

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6. CONFLICT OF INTEREST

The authors have no conflict of interest.

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