











Table 5. Obstacle degree of main index hierarchy of land use efficiency in Xianning-Yueyang-Jiujiang area from 2001 to 2010 (%)

Year	Project	Xianning			Yueyang			Jiujiang		
		Index sorting			Index sorting			Index sorting		
		1	2	3	1	2	3	1	2	3
2001	Obstacle factors	$C_8$	$C_{20}$	$C_9$	$C_8$	$C_{20}$	$C_9$	$C_8$	$C_{20}$	$C_9$
	Obstacle degree	16.57	11.19	10.24	16.80	10.39	10.38	17.56	11.86	10.85
2002	Obstacle factors	$C_8$	$C_{20}$	$C_9$	$C_8$	$C_9$	$C_{19}$	$C_8$	$C_{20}$	$C_9$
	Obstacle degree	17.25	11.07	10.40	17.26	10.30	10.27	18.29	12.38	10.93
2003	Obstacle factors	$C_8$	$C_{20}$	$C_9$	$C_8$	$C_{20}$	$C_9$	$C_8$	$C_{20}$	$C_9$
	Obstacle degree	13.50	12.20	11.07	17.03	12.26	10.61	19.06	12.72	10.79
2004	Obstacle factors	$C_{20}$	$C_{10}$	$C_8$	$C_8$	$C_{19}$	$C_{10}$	$C_8$	$C_{20}$	$C_{10}$
	Obstacle degree	13.14	12.46	12.40	17.51	13.07	9.96	18.72	12.60	10.59
2005	Obstacle factors	$C_{20}$	$C_{19}$	$C_9$	$C_8$	$C_{20}$	$C_7$	$C_8$	$C_{20}$	$C_9$
	Obstacle degree	12.75	12.03	11.48	19.02	11.08	10.35	18.90	11.54	10.22
2006	Obstacle factors	$C_{20}$	$C_{19}$	$C_9$	$C_8$	$C_{20}$	$C_7$	$C_8$	$C_{19}$	$C_9$
	Obstacle degree	13.70	12.88	11.43	19.62	12.09	9.76	18.03	9.32	9.23
2007	Obstacle factors	$C_{20}$	$C_8$	$C_{19}$	$C_8$	$C_{20}$	$C_{19}$	$C_8$	$C_{19}$	$C_9$
	Obstacle degree	13.95	13.81	13.10	21.83	12.27	10.57	18.69	11.23	9.25
2008	Obstacle factors	$C_{19}$	$C_8$	$C_9$	$C_{20}$	$C_8$	$C_{10}$	$C_8$	$C_9$	$C_7$
	Obstacle degree	19.37	15.69	9.75	19.29	10.81	9.97	20.87	9.42	9.06
2009	Obstacle factors	$C_{20}$	$C_8$	$C_{19}$	$C_8$	$C_{19}$	$C_7$	$C_8$	$C_{19}$	$C_9$
	Obstacle degree	16.79	11.37	11.27	12.90	12.55	12.33	16.30	14.68	7.33
2010	Obstacle factors	$C_{20}$	$C_{11}$	$C_{17}$	$C_{14}$	$C_{11}$	$C_{16}$	$C_{17}$	$C_4$	$C_{14}$
	Obstacle degree	73.35	10.37	9.89	21.98	18.59	17.60	18.70	16.59	16.39

except that in Xianning and Jiujiang had temporary drop in 2002. In Yueyang and Jiujiang, there were four stages, low, moderate, good and excellent; while in Xianning, there were only three phases, low, moderate and good.

(2) The obstacle degree of the criterion layer index indicates that the economic level has the maximum obstacle degree of the land use efficiency in these regions, followed by the environmental quality, ecological situation and social development. The key point to improve the land use efficiency should be laid in the environmental quality and ecological status.

(3) The obstacle degree of index layer factor indicates that the average financial revenue, output of comprehensive utilization of “three wastes” and gross domestic product per capita are the top three obstacle factors in Xianning, Yueyang and Jiujiang, which mainly reflect the economic level and environmental quality. The regional differences are not so significant. The low land productivity levels and the lack of new technology to utilize waste and develop the recycling economy are the main reasons of the low land use efficiency.

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