Rural Valuation Topic #RVT 18: Price Ratios *versus* Manual Allocation

Some valuers ask about manual allocation, i.e., adjusting the initial allocation suggested by the ratios for productivity differences by land category. The difference is best understood by beginning with the allocation chart from Rural Valuation Opinion Advisory #RVA 13:

Paired Sales *(with Ratios from 100% Allocation Line)* **& Subject Valuation with ER**

		Appraiser's Sale Allocation				
		Sale 22	**Sale 23**	**Sale 24**	**Sale 25**	**Sale 26**
Land Category	**Ratios**	*$/Acre*	*$/Acre*	*$/Acre*	*$/Acre*	*$/Acre*
Land Type 1	**100%**	**$ 3,800**	**$ 3,100**	**$ 3,300**	**$ 2,800**	**$ 3,000**
Land Type 2	75%	$ 2,850	$ 2,325	$ 2,475	$ 2,100	$ 2,250
Land Type 3	50%	$ 1,900	$ 1,550	$ 1,650	$ 1,400	$ 1,500
Land Type 4	25%	$ 950	$ 775	$ 825	$ 700	$ 750
Subject's ER	80%	*< Given in this example (calculations not shown)*				

Subject		**Sale Elements**				
Productivity	**Ave**	**Good**	Ave	Ave	Ave	Ave
Size	**Small**	**Ave**	**Ave**	**Ave**	Small	Small
Access	**Ave**	Ave	**Good**	Ave	**Good**	Ave

Prod. Pairing	**Sale 22**	**$ 3,800**			**Subj. ER**	**Sale Adj.**
	Sale 24	**$ 3,300**	$/Ac. Diff: $	500	80%	**$ 400**
Size Pairing	**Sale 24**	**$ 3,300**				
	Sale 26	**$ 3,000**	$/Ac. Diff: $	300	80%	**$ 240**
Access Pairing	**Sale 24**	**$ 3,300**				
	Sale 23	**$ 3,100**	$/Ac. Diff: $	200	80%	**$ 160**

Subject's Value $3,000 per acre for $100% land X 80% ER = $2,400/acre
[Then "Allocate" to the subject's land categories based on its ratios; or using $2,400/acre X 100%, 75%, 50% and 25% like sales for blended $/ac.]

If the original allocation is THEN adjusted ***manually***, say for production too, the procedure mixes the quantity of land in Types 1, 2, 3, and 4 with productivity (quality) and producing a hybrid. This procedure will NOT provide the same, or mathematically pure, results. Sales 23 and 24 are used in a pairing for location in the chart above. The contrast below uses ratios (left) versus manual allocation (right):

	Ratio Allocation				Manual Allocation Sale 23			
	Sale 23				Sale 23			
Land Category	**Acres**	**Ratio**	*$/Acre*	**Contribution**	**Acres**	**Ratio**	*$/Acre*	**Contribution**
Land Type 1	140	100%	**$ 3,100**	$ 434,000	140	100%	**$ 3,350**	$ 469,000
Land Type 2	60	75%	$ 2,325	$ 139,500	60	**60%**	$ 2,000	$ 120,000
Land Type 3	20	50%	$ 1,550	$ 31,000	20	**34%**	$ 1,150	$ 23,000
Land Type 4	40	25%	$ 775	$ 31,000	40	**18%**	$ 588	$ 23,500
Total Ac. & Price	260		*$ 2,444*	$ 635,500	260		*$ 2,444*	$ 635,500
Sale ER		78.85%			Sale ER	72.96%		
			Blended $/Ac.				Manual Blended $/Ac.	

Sale 23 shows the same overall sale price per acre of $2,444/ac. (i.e., the blended $/acre). When the sale was allocated **manually**, Land Type 1 was increased to account for its slightly stronger production and quality. By increasing the allocation to Type 1, a smaller portion of the price is available to distribute to the remaining three categories thus, the manual allocation suggests a lower contribution for Land Types 2-4 than the "ratio" method (blue). The main point is that the ER ratings are different due to the contribution or "thickness" of each layer within the whole. In this example, Sale 23's proportionality and ER declined ~6% from 78.85% to 72.96%.

To further illustrate the impact of manual allocation, consider Sale 24 which was used in the "access" pairing presented in the first chart. The same illustration showing the "ratio" allocation (left) versus "manual" allocation (right) is shown below.

	Ratio Allocation				Manual Allocation Sale 24			
	Sale 24				Sale 24			
Land Category	**Acres**	**Ratio**	*$/Acre*	**Contribution**	**Acres**	**Ratio**	*$/Acre*	**Contribution**
Land Type 1	85	100%	**$ 3,300**	$ 280,500	85	100%	**$ 3,000**	$ 255,000
Land Type 2	38	75%	$ 2,475	$ 94,050	38	83%	$ 2,500	$ 95,000
Land Type 3	42	50%	$ 1,650	$ 69,300	42	50%	$ 1,500	$ 63,000
Land Type 4	56	25%	$ 825	$ 46,200	56	46%	$ 1,376	$ 77,050
Total Ac. & Price	221		*$ 2,217*	$ 490,050	221		*$ 2,217*	$ 490,050
Sale 24 Ratio ER		67.19%			Sale 24 ER	73.91%		
			Blended $/Ac.				Manual Blended $/Ac.	

In the manual allocation (highlighted in yellow), the value of Land Type 1 was decreased because its production was slightly *lower* than the norm. Now, there is *more* unallocated price to spread across the remaining three categories. The resulting ER is 73.91% versus the ratio analysis at 67.19%.

Manual Allocation Results: If a pairing for "access" is now completed for Type 1 land (100% land) for manually allocated Sales 23 and 24:

- $3,350/acre from Sale 23 (green on the prior page), versus
- $3,000/acre for Sale 24 (yellow above)
- $ **350/acre** difference.

The ASFMRA recommended use of ratio pairing (blue to blue) indicates an adjustment of **$200/acre** ($3,300 v. $3,100/acre) versus the $350/acre shown by the manual allocation. There are differing results because ***productivity was adjusted for during the allocation*** --- so instead of just dealing with quantity or layer thickness (proportionality) within the original ratios, the "manual allocation" generates a hybrid at $350/acre that includes productivity as well as quantity and quality. The resulting land categories were either penalized or enhanced as a result of mixing productivity into the allocation. As a result, any pairing calculated from Land Types 2, 3, and 4 become even more divergent with nearly meaningless adjustment indications.

ASFMRA's Recommendation: Allow the ratios to account for "quantity" or "proportionality" of land within each category. If there are productivity differences, then ***add another category***, i.e., Land Type 2b and or 2c as a sub-set of Type 2 (say, Cropland 1, 2, & 3).