Executive Summary of the Leasing Study
Montana Department of Revenue
August 11, 2014

This study, completed at the request of the Department of Revenue's Property Assessment Division, describes the results of a recent survey of crop-share and cash leasing arrangements for dry and irrigated crop land and grazing land in Montana in the calendar year 2013. The primary data was collected by the Bureau of Business and Economics Research at the University of Montana and between April and July of 2014. The data provided by 879 respondents were analyzed by faculty in the Department of Agricultural Economics and Economics at Montana State University. The leases in this sample represent 750,000 acres in Montana. Nearly half (46%) of the acres in this sample were cash leases for grazing, 24% were cash leases for dry land crops, 20% were share leases for dry land crops, and the remaining 10% were for other leases. Dry land crop leases were evenly divided between share (49.3%) and cash (50.7%) leases, while both irrigated crop and grazing leases were primarily cash leases. All results reported in this study are weighted by the number of acres leased by the land owner. The most important results are summarized below:

(1) The sample indicates that share leasing arrangements comprised 46% of the acreage in dry crop land leases. The average crop share arrangement paid 34% of realized crop revenue to the owner (95% confidence interval was between 32% and 35%). Two-thirds of all dry crop land owners in the sample shared in the payment of selected expenses. Please note, this study assumes that property taxes and liability insurance are paid by the land owner.

(2) The sample indicates that 54% of the acreage in dry crop land leases is leased on a cash basis. The average cash lease paid the land owner $26 (with a 95% confidence interval of between $24 and $29/acre). Twenty percent of land owners with cash leases paid selected expenses. The average expenses paid were $2/acre (with a 95% confidence interval of between $1 and $4/acre).

(3) The sample indicates that only 19% of irrigated crop land acreage is leased on a crop share basis. The average crop share arrangement paid 38% of the realized crop revenue to the owner (with a 95% confidence interval of between 33% and 43%). About two-thirds of irrigated crop land owners leasing such land on a crop share basis also shared in the payment of selected expenses.

(4) The sample indicates that 82% of the acreage in irrigated crop land leases were leased on a cash rent basis. The average cash lease paid the land owner $75 (with a 95% confidence interval of between $68 and $82/acre). Fifty-five percent of these land owners paid selected expenses. The average expenses paid by owners leasing irrigated land on a cash basis were $10/acre (with a 95% confidence interval of between $6 and $14/acre).

(5) In the sample, share leasing arrangements existed for only 12% of the acreage rented for grazing land. The average share arrangement paid 41% of the revenue

to the owner (with a 95% confidence interval of between 27% and 56%). About 40% of grazing land owners leasing land on a share basis contributed to some of the livestock expenses. However, it must be emphasized that, given the small number of observations in the sample for shared grazing leases, these results should be used with caution

(6) The sample indicates that 88% of the acreage in grazing land leases was leased on a cash rent basis. The information about cash rents for grazing land was reported on the basis of both acreage (dollars per acre) and animal unit months (dollars per AUM). The average per acre cash lease for grazing land paid the land owner $8 (with a 95% confidence interval of between $7 and $10/acre). Over 38%t of these land owners paid selected expenses. The average expenses paid by owners with grazing land cash leases were $3/acre (with a 95% confidence interval of between $2 and $4/acre).

The average per AUM cash lease paid the land owner $21 per AUM (with a 95% confidence interval of between $17 and $25/AUM). The average expenses paid by such owners were $3/AUM (95% confidence interval was between $2 and $4/AUM).

The average lease rates (tenant's cash payment) reported by NASS for 2012 and 2013 for dry crop land and grazing land on AUM basis fall within the 95% confidence intervals in this study; while, the average lease rate report for irrigated crop land is somewhat higher than the average lease rate computed in this study. No share leasing arrangement percentages are reported by NASS.

The number of observations were adequate for share arrangements for dry crop land, and cash arrangements for dry and irrigated crop land and grazing land. Caution should be exercised in using the share arrangement results for irrigated crop land and grazing land. While the county location of these lease arrangement is known, this study only provides state-wide estimates. Finally, it should be noted that in the observations that were collected on leasing arrangements, in a relatively high percentages of cases, respondents did not report cash lease amounts, animal unit numbers, and crop yields, which limited the number of observations that could be used in the analysis.

The Department of Revenue currently uses a 25/75% share arrangement in their calculation of the share of revenue between the land owner and tenant. This calculation is based on a traditional crop share arrangement of 33/67% with other expenses incurred by the land owner estimated to be approximately 25% of the revenue paid by the tenant to the land owner. When the expenses are deducted from the revenue paid by the tenant, the final crop share effectively represents a 25/75% leasing arrangement between the land owner and tenant.
The survey data on leasing rates and landlord expenses obtained in this study are used to evaluate the Department of Revenue assumption that landlord expenses account for 25% of the landowner's crop share. We examine the percentage of expenses in cash leasing arrangements, where we know the total revenue per acre paid by the tenant to the land owner and, except for property taxes, other expenses paid by the land owner. Using 95 percent confidence intervals,

for dry crop land, operating expenses paid by the landlord were between 4% and 14% of total cash rent revenues. Similarly, for irrigated crop land, operating expenses paid by the landlord were between 3% and 20% of total cash rent revenues. For grazing land (AUM basis), operating expenses paid by the landlord were between 12% and 16% of total cash rent revenues. However, given the number of missing values in these data, concerns about the accuracy with which landowners reported the operating expense estimates, and the lack of information on property taxes, we would suggest that the Department Revenue continue to use the 25/75% share arrangement in their land valuation formula.

The Department utilizes a 12.5/87.5% crop share split between the landowner and the tenant for summer fallow lands. This calculation assumes that summer fallow land is one-half of the land planted on the parcel of leased land. Based on the dry crop land estimates, operating expenses on fallow land would be between 2% and 7% of total revenue. Given the widespread changes in crop rotations that have taken place over the past fifteen years (associated with air seed, chemical fallow, and other technological innovations), the one-half fallow land assumption should be reviewed; however, given the number of missing values in the survey data obtained in this study and concerns about the accuracy of the operating expense estimates, we would suggest that currently the Department Revenue continue to use the 12.5/87.5% share arrangement in their land valuation formula.

The missing data and accuracy challenges in this study warrant considering other methods of collecting leasing information. Leasing arrangements are typically negotiated legal documents between two parties; hence, there is substantial variability in them. In addition, there were concerns about how knowledgeable land owners were about operating expenses; especially, those not engaged in agriculture for many years and being geographically separated from the farm or ranch. Given these challenges, we would suggest utilizing a more qualitative approach to collecting these data. This approach would require selecting a sample of tenants willing discuss the terms of their lease agreements in detail. The survey instrument employed would examine the financial contributions of the land owners and tenant. Utilizing this technique, high quality data would be available on revenue and costs.