



Contents lists available at ScienceDirect

Rangeland Ecology & Management

journal homepage: <http://www.elsevier.com/locate/rama>

The Contribution of Amenities to Landowner Income: Cases in Spanish and Californian Hardwood Rangelands

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ARTICLE INFO

Article history:

Received 15 January 2016

Received in revised form 12 February 2017

Accepted 16 February 2017

Available online xxxxx

Key Words:

capital gains
contingent valuation
dehesa
income accounting
ranch

ABSTRACT

Rangeland economists have noted that people tend to pay far more for ranches and rangelands than can be justified by the potential income from livestock operations alone. This gap in price can be explained when the value of the amenity benefits from owning a ranch and the capital gains from the rangeland investment are integrated as part of the “income” accruing to the landowner. In this paper, we apply an accounting framework that takes such values into account, the Agroforestry Accounting System, to three hardwood rangeland case studies in Andalucía (southern Spain) and three in California. We estimate how commercial operations, private amenities consumed by the landowner, and capital gains contribute to landowner income and rangeland investment profitability in these case studies. Results show that private amenity consumption and capital gains make the greatest contribution to landowner income. When these income components are included in the estimations, total real profitability ranges from 2.7% to 4.5% in the Spanish cases and from 4.5% to 7.8% in the California cases, rates that are competitive with alternative investments. Our results suggest that conservation programs may be strengthened by enhancing or building on amenity benefits to landowners, motivating them to engage in and continue with these programs. In addition, landowner willingness to pay for amenities may increase the cost-efficiency of programs that would enhance the provision of these, or of closely related, amenities.

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Introduction

Standard national and farm accounting for agriculture and forestry focus on the commercial operating income from land investments (AAEA, 2000; European Communities, 2000; European Commission, 2010, 2013; BEA, 2016). In extensive rangeland systems in western Spain and the United States, this kind of accounting shows negative profitability rates for livestock operations (Martin and Jefferies, 1966; Agee, 1972; Workman, 1986; Campos and Riera, 1996; McGrann, 2000; Torell et al., 2001; Forero et al., 2004; USDA, 2016). Yet ranch and rangeland market prices are much higher than can be justified by the income from commercial production (Torell et al., 2001). How can this be explained?

This paper has been funded by and is a contribution to the projects *Valoración de la Renta y el Capital de los Montes de Andalucía (RECAMAN)* (CSIC/Junta de Andalucía, contract NET165602); *Assessing the Non-Market Values of California Ranches* (ANR-UC Division); *Avances en técnicas econométricas aplicadas a la valoración ambiental y a modelos de cambio de uso del suelo* (CSIC, intramural grant 2009101130); *The bioeconomics of Mediterranean oak woodlands in Spain and California* (CSIC, grant I-Link0253); and *Working woodlands: Defining the social and ecological framework for Mediterranean oak woodland conservation through ranching and extensive land use* (USDA-NIFA McIntyre-Stennis project, grant CA-B-ECO-0117-MS 1004637).

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One explanation theorizes that standard accounting systems fail to consider all the benefits of owning a ranch—benefits that ranch purchasers are willing to pay for. It is well documented that private non-industrial rangeland owners in Spain and the United States consume amenities such as living in nature or a rural lifestyle from land ownership (Martin and Jefferies, 1966; Torell et al., 2001; Campos et al., 2009), that these amenities have a significant influence on the market price of ranchlands (Pope, 1985; Torell et al., 2005; Wasson et al., 2013), and that they are part of motivations for landownership (Young and Shumway, 1991; Liffmann et al., 2000; Rowe et al., 2001; Gentner and Tanaka, 2002; Campos et al., 2009; Huntsinger et al., 2010). Land revaluation is also often ignored in standard income accounting for agriculture and forestry, further reducing our ability to understand land prices and investment decisions in rangelands. Capital gains, particularly those due to land revaluation, are important in the long term for understanding landowner decisions and the income from rangeland investment (Martin and Jefferies, 1966; McElroy, 1976; Workman, 1981; Eisner, 1989; Torell et al., 2005).

In this study we propose an alternative to standard accounting methods for gaining a fuller understanding of what values motivate people to invest in ranches and rangelands, as well as to quantify these values. We apply the experimental Agroforestry Accounting System (AAS) (Campos et al., 2008) at the farm scale to integrate non-market private amenity consumption and capital gains into

<http://dx.doi.org/10.1016/j.rama.2017.02.002>

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Please cite this article as: Oviedo, J.L., et al., The Contribution of Amenities to Landowner Income: Cases in Spanish and Californian Hardwood Rangelands, *Rangeland Ecology & Management* (2017), <http://dx.doi.org/10.1016/j.rama.2017.02.002>

measurement of landowner income and profitability on hardwood rangelands. The AAS was developed to extend the criteria of standard national accounting in order to better estimate the total income from an ecosystem that incorporates both natural processes and human interventions in economic activities (Campos et al., 2008; European Commission, 2013; BEA, 2016; Ovando et al., 2016). Our accounting approach provides a complete set of income, capital, and profitability indicators for both commercial and private amenity activities. It also distinguishes between the income derived from rangeland operations and the capital gains generated by changes in net worth. This avoids the undervaluation of rangelands and their products by standard accounting used in policy making because in the AAS the amenities that are consumed by landowners are given a monetary value and integrated as part of rangeland income and production.

Here, the empirical application is carried out in a comparison of privately owned hardwood rangelands in Andalucía (southern Spain) and California. We gathered data on commercial activities from six case studies of private hardwood rangeland properties (three in each location), private amenity consumption and land prices from two contingent valuation surveys applied to a sample of properties from each location, and land revaluation rates from published statistics (also for each location). The two places share a Mediterranean climate and open oak and conifer woodlands that permit the development of an annual grassland forage base, where livestock grazing is the main traditional land use. In both countries such hardwood rangelands are considered international “biodiversity hot spots” (Myers et al., 2000), and environmental organizations are actively engaged in conserving the woodlands and traditional land uses in these working landscapes (Campos et al., 2013). Rangeland operations potentially increase public ecological and economic values in these systems (Bugalho et al., 2011; Huntsinger and Oviedo, 2014).

Background

The concept we refer to as “private amenities” has been noted in diverse ways in the literature. Pope (1985) and Smith and Martin (1972) talked about [non] “consumptive use”; Torell et al. (2005) used quality-of-life values; and Bastian et al. (2002) and Wasson et al. (2013) referred to rural and environmental amenities. Gentner and Tanaka (2002) classified ranchers in the United States according to different motivations for ranching, mainly differentiating between professional and hobbyist ranchers. No matter how ranchers were classified, they are described as having motivations that go beyond commercial profit and as typically obtaining services from the land that do not include direct market transactions or inputs into commercial activities. We use the term “private amenities” because they are a result of private ownership of land. Thus, private amenities include the non-market (environmental) services consumed by landowners (e.g., open space, recreation, and scenic benefits) and other intangible benefits associated with the rural lifestyle (e.g., legacy options, status derived from owning a ranch, and opportunity to engage in ranching or hunting).

From an economic point of view, the implication of landowners valuing their land amenities is that they are capitalized into land prices and become a market value when the land is sold (Pope, 1985). Buyers are willing to pay to acquire the right to enjoy these amenities, and sellers incorporate their value into land price offers. Once the land is acquired, the annual amenity consumption by the landowner is not subject to a market transaction, so it does not have a directly observable market flow value—it is a private nonmarket benefit on the production side and a commercial capital gain on the land revaluation (capital) side.

The common analytic approach for this phenomenon is hedonic pricing. When analyzing the on-site contribution of amenities to land values, this method relates land prices to land attributes and estimates the part of the land price explained by amenities. In this context, hedonics have been applied to ranchland and ranchettes in Arizona (Martin and Jefferies, 1966; Sengupta and Osgood, 2003), rural

agricultural land in Texas (Pope, 1985), undeveloped private land in California (Standiford and Scott, 2001), agricultural land and rangeland in Wyoming (Bastian et al., 2002; Wasson et al., 2013), and ranches in New Mexico (Torell et al., 2005). Hedonic pricing proves useful for showing that private amenities are capitalized into land prices, and for determining how much of the land price is due to amenities. However, for calculating amenity income out of hedonic pricing we need to assume a discount rate that transforms the amenity capital stock value into an amenity flow income using the standard capitalization formula. With this procedure, both the estimated income and profitability rate figures depend on that discount rate.

In our approach we work with both a production account and a capital account, which allows estimating income values for each hardwood rangeland activity independently from the capital values associated with these activities (Campos et al., 2008). Thus, we estimate the income and profitability rates from different activities without relying on an assumed discount rate. The income from commercial activities is estimated from the case studies, the amenity income is estimated for each case study based on the contingent valuation results, and the capital values are estimated from the case studies and land price data.

We acknowledge that our estimations of private amenity consumption and land prices are based solely on the side of the market represented by current landowners. We are missing a part of the market represented by the potential buyers of rangeland properties, but they are difficult to identify and therefore analyze. We believe that it is better to have information on only one side of the market than it is to miss the economic values associated with private amenity consumption entirely.

Materials and Methods

Our analysis draws on six case studies of privately owned hardwood rangelands, three from Andalucía (southern Spain) and three from California. We offer detailed data on individual commercial activities and manufactured capital during an accounting period of 1 yr using these case studies. Then we obtain the private amenity product and land price values from two contingent valuation surveys of a larger sample of hardwood rangeland properties in each location. On the basis of the survey results, we estimate amenity consumption and land price values specific to each of the six case studies. Finally, we estimate an average land revaluation rate from published statistics in each study area and use it for the case studies. All these data are integrated into the Agroforestry Accounting System (AAS).

All AAS indicators are economic values and are presented in 2010 US dollars per hectare of useful agrarian land. The case study, private amenity consumption, and land price data from Spain were estimated in 2010 euros and converted to 2010 US dollars when integrated into the AAS using the euro-dollar currency rate for 2010 (€1 = \$1.3257 in 2010; Eurostat, 2016). Commercial data from the California case studies were taken in 2007 US dollars and converted to 2010 US dollars when integrated in the AAS using the 2007–2010 inflation rate for California (\$1 in 2007 = \$1.0437 in 2010; California Department of Finance, 2014). California private amenity and land price functions correspond to a survey done in 2004 but analyzed in 2002 euros (Campos et al., 2009). For integrating the values from these functions into the AAS, we converted them to 2002 US dollars using the euro-dollar currency rate for 2002 (€1 = \$0.9456 in 2002; Eurostat, 2016) and then to 2010 US dollars using the 2002–2010 inflation rate for California (\$1 in 2002 = \$1.2193 in 2010; California Department of Finance, 2014).

Products and intermediate consumptions are valued at producer and purchase prices, which exclude subsidies and taxes on production (European Commission, 2013; BEA, 2016). This is because our approach focuses on the income generated by the hardwood rangeland, while subsidies and taxes are considered money transfers from and to other sectors of the economy. In addition, subsidies are usually temporary and change often, so they rarely affect land prices. We also note that subsidies are different in each region. In Spain, rangeland owners mostly

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