Managing the triple bottom line for sustainability: a case study of Argentine agribusinesses

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Using surveys and interviews with Argentine agribusiness owners and managers, we examine the relative importance of economic, environmental, and social goals in their planning processes. While in one survey, respondents rate these three objectives as equally important, they also prioritize economic goals over environmental and social targets when assigning points based on the importance of decisions made for various sub-categories. Discussions of specific scenarios illuminate goal importance, but also demonstrate that perceived losses can be valuable for understanding how managers think about sustainability in terms of comparative economic gains, social relationships, and different social and economic outcomes. Subsequent analyses suggest that the three categories of the “triple bottom line” are overly rigid and cannot capture the integration among environmental, economic, and social aspects of sustainability. Given these findings, we suggest future directions for research on losses, time scales, and sustainability.

Keywords: managing for sustainability, Triple Bottom Line, agribusiness, Argentina, social goals

Introduction

Businesses in many parts of the world are discussing sustainability more than ever, often to understand what the word means within different organizational decision-making contexts. Perhaps the most common definition measures a firm’s focus and progress along three trajectories, the so-called triple bottom line: economic well-being, environmental quality, and social justice. The notion of a triple bottom line became popular in the early 1990s following publication of the Brundtland Report and during intervening years an increasing number of companies have chosen to report non-financial measures. According to the KPMG 2013 Survey of Corporate Responsibility Report (which covers 4,100 companies in 41 countries), the number of firms voluntarily reporting some non-economic (environmental and social) metrics to corporate sustainability rating agencies increased from approximately 10% to over 90% between 1993 and 2013. This increase has been fueled in part by greater stakeholder expectation that reputable businesses are concerned with sustainability (Sridhar, 2012).

In 2013, almost all of the top 250 corporations on Fortune’s Global 500 list provided some type of reporting on their corporate social responsibility (CSR) activities. Eighty-two percent of them referred to the Global Reporting Initiative (GRI) guidelines which emerged from work carried out by CERES, a Boston-based non-governmental organization (NGO) focused...
on encouraging the adoption of sustainable business practices and solutions by economic entities.\textsuperscript{1} Though GRI’s original purpose (dating back to the 1990s), was to provide mechanisms to determine environmentally responsible conduct, over the years the framework and protocols have expanded to also include social and governance activities (ESGs). In its latest iteration, the fourth generation of the guidelines (called G4) provide reporting principles and standard disclosures. They also identify the criteria that an organization should use to prepare its sustainability report, including evidence of economic, environmental, employee, shareholder, and stakeholder impact.\textsuperscript{2}

A major problem, however, is that simply disclosing about sustainability is often confused with actually making progress toward being more sustainable (Milne & Gray, 2013). While concern with sustainability is usually accompanied by measurement across the triple bottom line, simply reporting ESG outcomes is not evidence of positive overall impact on environment and society (Sridhar, 2012). Additionally, evidence shows that firms tend to report cherry-picked positive ESG activities while overlooking aspects of their operations that have negative impacts and connotations (Cho et al. 2015).

Nonetheless, a benefit of reporting is that it has introduced the triple bottom line into the conversation in boardrooms, drawing attention to existing environmental and social consequences of economic decisions and introducing new levels of transparency and changes in legislation (Wilburn, 2014). Greater cooperation among different CSR rating agencies also suggests a move toward understanding that economic growth, social well-being, and environmental quality are interdependent (Stutz et al. 2012). However, Norman & McDonald (2004) argue that triple bottom line accounting focuses to an overly large degree on the economic values of sustainability, ignoring a long history in business of incorporating non-economic values into decision making.

The question then remains: How do we incorporate sustainability into business activities, thereby moving from the realm of talk into action? In this article, we examine sustainability as a decision-making process in which owner-managers make tradeoffs among different options facing their organizations. The concept of the triple bottom line and discussions of tradeoffs already suggest that sustainability is about decisions, but this article takes this starting point and uses real-world situations to probe what decision making for sustainability means in practice. We consider four aspects of decision making and sustainability.

First, decision making for sustainability usually occurs under conditions of uncertainty, both in terms of the context surrounding the decision as well as associated outcomes and probabilities (Chichilnisky et al. 2012). Managers unavoidably make decisions that affect environmental, social, or even economic sustainability without full knowledge of the context or a clear understanding of causal relationships between choices and outcomes. To understand decision making for sustainability requires that we examine conditions of uncertainty.\textsuperscript{3}

Second, although decision making is frequently characterized as involving tradeoffs among the components that comprise the triple bottom line, there is little discussion about the relative importance and weighting assigned to the three areas. Arguably, balance assumes that the economic, environmental, and social consequences (and measures) are equally weighted in terms of significance (Santiago-Brown et al. 2015). However,

\begin{itemize}
\item \textsuperscript{1} CERES was previously known as the Coalition for Environmentally Responsible Economies. For further details, see http://www.ceres.org.
\item \textsuperscript{2} Refer to www.globalreporting.org.
\item \textsuperscript{3} All managerial and business decisions involve some form of uncertainty about causal relationships and future outcomes. Sustainability highlights uncertainties added by environmental and social relationships, often not made explicit in business planning.
\end{itemize}
social justice and environmental quality are not typically considered at par with economic outcomes for businesses (Kumar, 2014), and an unequal weighting of the three elements effectively changes the definition of sustainability. As the balance among the three elements changes, so does the context surrounding the decision maker and the organization’s decision process, and therefore its actual choices (i.e., the relative weighting of the three elements of sustainability is crucial and can depend on the context).

Third, we consider the role of decision priorities for choices that are made. Traditional business measures of outcomes (e.g., profitability) do not necessarily predict importance, but goals can and do signal likely choices and therefore outcomes (Krantz & Kunreuther, 2007). We therefore focus on how decision makers (typically CEOs of family-run enterprises) prioritize and make tradeoffs among economic, environmental, and social goals given their socioeconomic and political contexts. Specifically, we examine whether businesses consider elements of the triple bottom line as goals for their decisions and the relative importance that they give to these objectives.

Finally, we investigate the role of risk perception in decision making. Do the assessments of agribusiness managers incorporate social risks as well as environmental and economic risks? How do social considerations in their decision making relate to environmental and economic factors? Given the novelty of these questions, we ask more broadly how we can begin to characterize the intersection of triple bottom line accounting and risk perception.

This article considers decision making for multiple aspects of sustainability under conditions of uncertainty as a way to expand ideas about sustainability in business and decision making under uncertainty. We use a real-world case in which uncertainties are very important—agriculture. Agribusinesses are ideal candidates for studying the triple bottom line because firms need to balance land use, technology, and labor to be economically sustainable. They arguably also must give credence to all three aspects to ensure their survival; yet their primary success measures are economic in nature.

More broadly, agribusinesses are primary players in determining the continuity and sustainability of agricultural systems globally. Our work complements studies on industrialization (Boehlje & Gray, 2007; Drabensott, 1995) and globalization (Pimentel, 2004) in the food and agricultural sector and the impact of “corporatization” of agriculture in the form of agribusinesses (Schertz & Daft, 1994) on sustainability and maintenance of the triple bottom line.

While clearly not representative of all businesses, Argentine agribusiness allows us to examine how such companies perceive the relative risks across the triple bottom line and prepare for contingencies under conditions of climatic and economic uncertainty. In taking this approach, we find that decision making for sustainability necessarily involves a more integrated view than is currently promoted as a triple bottom line approach. Our research shows that decision makers often focus on expected losses, but in a much more nuanced way than the literature on loss aversion suggests. We argue that our findings point to the need for a much more dynamic view of decision making for sustainability.

**Background on the Argentine Pampas**

The Argentine Pampas is among the most naturally fertile regions in the world (Hall et al. 1992; Calviño & Monzón, 2009). However, climate fluctuations, technological innovations, and global and local economic and political contexts have shaped the evolution of agricultural systems in the Pampas (Bert et al. 2011). Specifically, over 80% of the agriculture in the Pampas is rain fed, mainly due to the high cost of irrigation. Over the past two decades, climate change has increased the variability in precipitation...
(Seager, 2010) with extremes becoming more frequent. As a result, despite its natural fertility, agricultural outcomes in the region, in terms of yield and profitability have become unpredictable (Giorgi, 2002).

There have been significant changes in land use and the structure of the farming sector. Due to its higher profitability compared to other enterprises, cropping-related activities now encompass over 70% of the cultivable land, displacing pastures and native grasslands (Magrín et al. 2005; Pengue, 2005; Viglizzo, 2011). The growing global demand for grains, together with local changes in the Argentine economy, cost savings, and the simplification of agronomical management, have recently enhanced the relative profitability of agriculture in Argentina (Qaim & Traxler, 2005). Approximately 23 million hectares are currently cropped in the Pampas, nearly 60% by those who rent the land (MAGP, 2015). Argentine agriculture is not a subsidized sector and farmers accordingly take on the full risks inherent in commodity markets; their economic incentive is the potential profit based on actual crop prices (Chaddad et al. 2009). Since “losses loom larger than gains” (Tversky & Kahneman, 1991), agribusinesses should be highly concerned with overcoming their initial loss (financial outlays for, say, rent, seeds, and fertilizer) and stemming additional losses. In other words, the initial outlay of costs is likely to determine choices and tradeoffs vis-à-vis the triple bottom line.

Agriculture in Argentina currently employs 10% of the country’s workforce (FAO, 2012). Traditionally, farmers lived on the land and maintained deep connections with the local community, hiring from within and sourcing most of their needs from proximate sources. Recent structural changes have altered these relationships through changes in contract forms, outsourcing, and external investments (Chaddad et al. 2009). This raises issues central to social sustainability, such as local participation, equity, and social cohesion (Murphy, 2012). Not only do these conceptual and practical objectives constitute good social policy, but research in psychology shows that social-contextual conditions are central to the creation of meaningful work, an essential feature of human well-being and productivity (Ryan & Deci, 2000).

The economic focus in the Pampas on export crops is inexorably coupled with environmental and social changes. Unlike pastures, which are multi-year investments present on the land year-round, agricultural crops are annual choices that may remain for anywhere from four to eight months. When land is fallow, it collects water through rainfall, but does not lose nearly as much through evaporation as it would through the evapotranspiration that occurs when plants are in the ground. Thus, the depth of the water table has shifted upwards throughout the region by an estimated two meters over the course of the last twenty years (Aragón et al. 2011), increasing the probability of inundation from severe rainfall. Floods and droughts have varying social and economic implications. Floods cause greater disruption of social life and capital, while droughts lead to greater economic hardship.

The decision processes of agribusinesses in the Pampas present an interesting real-world case study because of an apparent contradiction. On one hand, decision makers are heads of businesses with profitability goals for the current cropping cycle and they have a desire to ensure their immediate survival by preventing a loss. On the other hand, their very existence is linked to maintaining the long-term productivity of the land and employees, who have the local knowledge to help maximize each farm plot. Environmental and social goals are therefore inexorably intertwined with economic goals, and essential to the long-term sustainability of agribusiness in the region. These goals, however, are neither easy to measure nor direct in their impact upon the bottom line (Sridhar, 2012). Agribusinesses thus provide
an invaluable opportunity to examine the relative importance of economic, environmental, and social considerations and to investigate how they connect to ideas about risk in agriculture.

Current Research

Our research reported here was exploratory in nature and we did not seek to test concrete hypotheses. Our goal instead was to explore three questions. First, do agribusiness decision makers in the Pampas consider economic, environmental, and social goals? Second, what is the relative importance they assign to these goals (i.e., how do they make tradeoffs)? Finally, what is the role of risk perception and losses in their decision processes?

Although we did not have specific predictions, we did expect to find a greater focus on economic goals and risks compared with social goals. Based on prospect theory (Kahneman & Tversky, 1979), which posits that decision makers are motivated differently in the domain of gains versus losses and likely to show loss aversion having experienced a loss, we expected minimizing losses beyond the initial financial outlays to be a priority. Since the initial investment would be experienced as a loss prior to a cropping cycle, our decision makers would likely prioritize maximizing economic gains ahead of their social obligations to employees, family, and community. Since profitability is connected to land quality, we expected environmental goals to be important, although perhaps less so than economic goals, particularly given the longer time scale for environmental outcomes. We anticipated that issues of human capital development, such as creation of social capital, concern with education, and maintenance of long-term employees, to be a lower priority.

We examine the three questions outlined above in two studies—a field survey with decision makers from agribusinesses in the Pampas and a series of in-depth interviews with fifteen agribusiness CEOs. The following sections discuss our methodology and results, as well as theoretical and policy implications.

Study 1: A Field Survey

We used the thirteen goals (five economic, three environmental, four social, and one personal) relevant to typical Pampas-based agribusiness or farm development (Arora et al. 2015) as the starting point of our analysis. Although we collected data on importance ratings for all objectives (see Arora et al, 2015), we only report results for the twelve goals (listed in Table 1) that we deem to be relevant to the triple bottom line. The personal goal of simplifying life, although it can be thought of as a social objective, maps on to a different factor and hence we do not consider it here. Participants also made tradeoffs across six pairs of goals (Table 2), two each for economic vs. environmental goals, economic vs. social goals, and environmental vs. social goals.

Our first study surveyed ninety Argentine agricultural decision makers regarding their business goals. Participants were attendees at one of a series of workshops hosted by the Asociación Argentina de Consorcios Regionales de Experimentación Agrícola (AACREA), a non-profit farmers association (the largest in Argentina) that supports farm efforts through dissemination of information and technology. Their membership includes medium to large farms and agribusinesses (smaller farms tend not to be sustainable in the Argentine Pampas—see Bert, 2011 for a review) that are involved in growing crops, dairy-related activities, ranching for beef, or some combination of these three activities. Thus, though all participants were members of the same organization (although with some selection bias), we contend that the inherent

4 For information about AACREA, refer to http://www.aacrea.org.ar.
### Table 1
Mean, Standard Deviations, and 95% Confidence Interval for Participant Self-reports of Importance of Goals in Service of the Triple Bottom Line in Study 1 (N = 64 participants)

| Goal | Mean | Standard Deviation | 95% Confidence Interval Lower Bound (M-2SD) | Upper Bound (M+2SD) |
|------|------|--------------------|-------------------------------------------|---------------------|
| Economic Goal | | | | |
| Meet or exceed profit objectives | 3.30 | 0.683 | 1.93 | 4.67 |
| Maximize productivity | 3.28 | 0.723 | 1.83 | 4.73 |
| Manage yield variability | 3.19 | 0.664 | 1.86 | 4.52 |
| Expand farm/grow agribusiness | 3.08 | 0.762 | 1.56 | 4.60 |
| Manage price obtained for crop | 2.75 | 0.836 | 1.08 | 4.42 |
| Average economic goal | 3.12 | 0.435 | 2.25 | 3.99 |
| Social Goal | | | | |
| Fulfill immediate responsibility to others | 3.66 | 0.511 | 2.64 | 4.68 |
| Create a learning organization | 3.45 | 0.641 | 2.17 | 4.73 |
| Create local social capital | 2.97 | 0.755 | 1.46 | 4.48 |
| Attain status | 2.91 | 0.811 | 1.29 | 4.43 |
| Average Social Goal | 3.25 | 0.477 | 2.30 | 4.20 |
| Environmental Goal | | | | |
| Preserve land quality | 3.50 | 0.667 | 2.17 | 4.83 |
| Ensure future viability of farm/business | 3.44 | 0.794 | 1.85 | 5.03 |
| Avoid environmental damage | 3.34 | 0.739 | 1.86 | 4.82 |
| Average Environmental Goal | 3.43 | 0.619 | 2.19 | 4.67 |

Note: Ratings are assigned on a 4-point scale where 1 = not at all important and 4 = very important.

### Table 2
Points Assigned Out of 100 Where Number of Points Reflects Relative Importance of Each Goal in Six-Goal Pairs Used to Test Tradeoffs Between Goals in Study 1 (N = 64 participants)

| Pair | First Goal Type & Goal in Pair | Average Points Assigned out of 100 | Second Goal Type & Goal in Pair | Average Points Assigned out of 100 | Paired Sample T-test |
|------|--------------------------------|----------------------------------|--------------------------------|----------------------------------|---------------------|
| 1    | Economic: Meet or exceed profitability goals | 56.09 | Environmental: Maintain productivity of land | 43.91 | $t = 3.22$ p = 0.002 |
| 2    | Economic: Expand farm operations | 56.88 | Environmental: Preserve and maintain land for future generations | 43.13 | $t = 2.57$ p = 0.013 |
| 3    | Economic: Meet or exceed profitability goals | 56.48 | Social: Create social capital in community | 43.52 | $t = 4.11$ p < 0.001 |
| 4    | Economic: Meet or exceed profitability goals | 66.87 | Social: Meet obligations to employees and family | 33.13 | $t = 6.99$ p < 0.001 |
| 5    | Environmental: Preserve and maintain land for future generations | 57.27 | Social: Create social capital in community | 42.73 | $t = 3.46$ p < 0.001 |
| 6    | Environmental: Maintain productivity of land | 62.07 | Social: Meet obligations to employees and family | 37.93 | $T = 8.07$ P < 0.001 |
diversity of the membership makes the results credible. Participants were either provided a link to an electronic version of the survey or given a paper copy, as per their preference. Both options allowed for anonymity.

Sixty-four participants returned surveys that were sufficiently complete for our analysis. To best capture underlying goals that influence decisions, we targeted the main decision maker, the owner or a CEO-manager. In addition, 60% of the total land in the Pampas is farmed on a rental basis, so our participants included those who own, rent, or both own and rent the land used in their agribusiness. Typically, crops are grown on rented land while owned land is used for multiple activities, such as growing crops, maintaining pasture for dairy, and beef ranching. Specifically, respondents who rented over 50% of their land grew crops on 74.7% of it, while those who owned over 50% grew crops on only 41.2% \[t(45) = 2.373, p = 0.022\]. This pattern is typical of the Argentine pampas (MAGP, 2015). There were no other statistical differences based on tenure (rental vs. ownership) status of land.

We asked respondents to consider the main agricultural decisions that they had made during the most recent cropping cycle (e.g., whether to rent additional land, how to allocate land use mix, and what crops to grow) and to rate the importance of all goals on a scale of 1 to 4 (where 1 = not important at all or not considered in decisions and 4 = extremely important or always considered in decisions). Thus respondents focused on the critical decisions that ensure the sustainability of their agribusiness, requiring them to balance all three areas of the bottom line—economic prosperity, environmental well-being of the land, and social capital and learning within their organizations. Participants then divided 100 points between two sets of goals such that the points assigned to each reflected the relative importance of that goal in their decision process, a methodology shown to have validity (Arora et al. 2012).

Importance Ratings

As a starting point, we calculated the mean (M), median, and standard deviations (SD) for the importance ratings provided by the participants for each of the twelve relevant goals included in the survey. As Table 1 shows, the overall ranges, means, and standard deviations did not vary significantly across goals. We tested this finding by calculating the 95% confidence interval (CI) for each goal rating as the M ± 2 x SD for each goal. All goal means fall within the ranges calculated for all other goals, so that all importance ratings are statistically similar. Table 1 also provides the 95% CI for each goal. Since ratings were on a 4-point scale, and all goal ratings were above 2, all were rated as important to very important in the decision process.

To further test this uniform rating of importance across the three categories of the triple bottom line, we averaged the importance ratings across the four economic goals, three environmental goals, and four social goals to create average scores for each criterion. The average importance scores are 3.12 (SD = 0.43) for economic goals, 3.25 (SD = 0.48) for social goals, and 3.43 (SD = 0.62) for environmental goals. All three average importance scores fall within ±2 SD of each other, or within the 95% CI, suggesting that their relative importance to the participants is not significantly different. Respondents self-reported that they treat all three aspects of the triple bottom line equally in their decision processes.

Tradeoffs Among Goals

We were interested in exploring how the importance ratings translated into decision-maker choices when tradeoffs were required. Respondents assigned points to each goal in the six pairs shown in Table 2, out of 100 total points. Table 2 shows the average number of points assigned to each goal type.
vis-à-vis the other goal type as well as the results of a paired-sample t-test for each pair of goals. The points assigned reflect the relative importance of each goal in decision processes. We created an average point score for economic goals when paired against environmental goals by considering the two pairs that compare economic and environmental goals. We calculated similar point scores for all three combinations—economic vs. environmental, economic vs. social, and environmental vs. social goals. This allowed us to conduct a paired-sample t-test for each set of averaged point scores.

In general, and as is seen in trends with individual goal pairs, more points were assigned to economic goals \( [M = 56.48, \ SD = 12.63] \) when paired with environmental goals \( [M = 43.52, \ SD = 12.63, t(63) = 4.11, p < 0.001] \), and a similar pattern was observed for points assigned to economic goals \( [M = 62.07, \ SD = 11.97] \) when paired with social goals \( [M = 37.93, \ SD = 11.97, t(63) = 8.07, p < 0.001] \). Thus, economic goals, which serve the financial bottom line, appear to be the main priority for the decision makers. We also measured environmental goals against social goals to be able to conduct a complete three-way comparison. Average points assigned to environmental goals \( [M = 60.74, \ SD = 15.59] \), compared with those assigned to social goals \( [M = 39.26, \ SD = 15.59] \), were significantly higher \( [t(63) = 5.51, p < 0.001] \).

If all goals are equally important, as suggested by the explicit importance ratings for each goal in Study 1 (see Table 1), then points assigned to each goal in a pair should be closer to a 50–50 point split. A statistical difference in points assigned suggests that importance ratings may be more like aspirations, or even “cheap talk,” while actual choices may be made based on a relative ranking: the three aspects of the triple bottom line are likely not implicitly valued identically. Specifically, economic goals clearly are considered more important than the other two categories, and environmental goals are considered more important than social goals. A hierarchy of importance emerges: economic goals, followed by environmental goals, and finally social goals. Since goals serve outcomes (Kruglanski & Kopetz, 2009), there is likely a similar hierarchy in outcomes: economic sustainability is considered most important, followed by environmental sustainability, and in third place, social sustainability (see also Santiago-Brown et al. 2012). Agribusinesses, however, are arguably more reliant that other enterprises on environmental and social sustainability to ensure economic sustainability. Thus, in Study 2, through qualitative interviews, we sought to understand the process by which decision makers prioritize the three categories of the triple bottom line, and to explore how the explicit assignment of equal importance to all goals from the survey contrasted with the implicit hierarchy across the three categories revealed by the forced assignment of points.

Study 2: In-depth Interviews

Our second study consisted of in-person interviews with the CEOs of fifteen agribusinesses in the Argentine Pampas. Specifically, we wanted to determine if these individuals actually considered all three categories of the triple bottom line during the decision process and, if so, whether they also followed the hierarchy observed in Study 1. We wanted to avoid inadvertently priming our respondents to consider all three categories, so that we could see which categories of goals emerged implicitly, and their natural ranking in the decision process. Therefore, we only asked open-ended questions about the main factors that mattered to interviewees during their planning process.

Our respondents were all male (typical and therefore representative of the region), and each was the main decision maker (CEO) of a family owned Argentine agribusiness that employed between two and twenty people with the specific number associated
with the size of their specific land holdings. Net worth varied between US$20–200 million. All but two interviewees were members of AACREA, and all of them volunteered their time.

We conducted interviews in Spanish or English depending upon the respondent’s preference and all authors of this article are either fluent in or have a working knowledge of both languages. Meetings were held at a location chosen by the respondent, such as their office, home, or a restaurant, in various towns in the Pampas, or at the offices of AACREA in Buenos Aires. We recorded all interviews with the consent of the respondents and we gave them as much time as they wanted for each response to learn about their underlying motivations without any external priming or elicitation. If, in a response, an interviewee did not mention a specific category of goals (economic, environmental, or social), we asked him to clarify his answer. We encouraged respondents who were very succinct in their initial responses to elaborate as an open-ended follow-up question. Initial questions were often followed with additional clarifying or probing questions. The interviews averaged 65 minutes, ranging from 46 minutes to 89 minutes.

Interview questions were open-ended and covered the following topics:

1. Main factors and goals in the planning process (description, ranking, and comparison with neighbors).
2. Information regularly tracked pertaining to major decisions (e.g., prices, rainfall, groundwater, crop selection).
3. Understanding of the environmental consequences of land use and crop selection strategies on groundwater available, including main sources of water for crops.
4. Concern about floods versus droughts.
5. Perceived changes in water availability over the past decade.
6. Changes in operations or decisions based on inputs about economic, environmental, or social factors.

Land use, which is often economically driven, affects groundwater availability. We therefore focus on the understanding of water availability and impact of human actions on land use and water availability.

Four coders initially listened to the recorded interviews and identified general themes. They then discussed these themes to identify main trends, after which the same group conducted a second round of coding to tabulate responses to specific questions to better analyze them. There was general agreement among the coders on the tabulation of responses.

We wanted to understand our respondents’ criteria for land-use plans, which would in turn determine their economic profitability for the current year, environmental outcomes such as ground water levels for the next year, and social outcomes such as continued employment. We therefore asked them to describe and prioritize these factors. All interviewees mentioned economics (including commodity prices, soybean demand, global economic concerns, and foreign exchange issues) as key considerations, and all but two respondents mentioned inter-annual crop rotation to maintain environmental quality. Other considerations included political context (seven mentions), crop yields (seven mentions), soil quality (five mentions), climate (five mentions), and social considerations (five mentions).

Six interviewees listed economic factors as the primary consideration, while another six ranked yields in first place. However, since yields determine how much crop can be sold, and thus overall profits for that year, we combined profits and yields to create a category of economic concerns. We separated yields from soil quality, which would be another determinant of how well the crops grow, but is clearly an environmen-
Table 3 Total Number of Unprompted Mentions and Rankings for Triple Bottom Line Categories by Interviewees in Study 2 (N = 15 Interviewees)

| Ranking provided by interviewee* | Economic concerns (e.g. prices, costs, yields, consumption) | Environmental Concerns (e.g. inter-annual crop rotation, soil quality) | Social & Human Concerns (e.g., quality of life, local community) | Other Factors (e.g. political climate) |
|----------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------|
| 1                                | 12                                                            | 5                                                                   | 0                                                               | 1                                    |
| 2                                | 4                                                             | 7                                                                   | 2                                                               | 2                                    |
| 3                                | 3                                                             | 5                                                                   | 2                                                               | 2                                    |
| 4                                | 0                                                             | 1                                                                   | 1                                                               | 2                                    |
| Total Mentions*                  | 23                                                            | 21                                                                  | 5                                                               | 7                                    |

*Note: Some factors were ranked at similar levels. Also, some mentions raised during the interview are included above, but were not ranked.

tal concern and was identified separately by the interviewees. We combined soil quality, climate issues, and crop rotation to create the category of environmental concerns. Table 3 shows both the number of mentions by triple bottom line category, and the number of times each category was ranked in first place. Respondents mentioned economic and environmental concerns 23 and 21 times respectively, suggesting that they view both as equally important. Concerns for employees and other stakeholders were mentioned only three times, while other factors like the political situation were mentioned seven times. These results replicate findings from our first study (see above), namely that when interviewees are asked to discuss goals, they mention economic, environmental, and social ones in that particular order.

To test perceived differences in importance, we asked respondents to rank the factors that they listed. As Table 3 demonstrates, economic concerns are ranked in first place twelve times, while environmental concerns are given that status only five times. Interviewees never ranked social factors first, but political factors are listed once. Thus, when it comes to rankings, we duplicate the tradeoffs observed in the first study among the categories of the triple bottom line—economic concerns come first, followed by environmental concerns, with social concerns in last position.

As a final step, we explored how triple bottom line considerations might affect decisions in a real-world scenario. We asked participants how they would respond to drought and flood, to get a better sense of the economic, environmental, and social impacts of these events. We presented our respondents with a scenario requiring them to choose between buying insurance that protects against floods versus drought. They could only choose to cover one potential risk, thus revealing their greater concern. As shown in Figure 1, ten of the fifteen interviewees chose drought insurance over flood coverage. Socially, floods disrupt life when standing water inhibits the movement of people, perhaps more so than droughts. Economically, however, participants view floods as having a lower potential for causing a total loss, since the higher level of water makes otherwise dry land productive, providing sufficient harvest to break even, or, in some years, make a small profit. Participants perceive droughts, in contrast, as leading to a full economic loss as land ceases to be productive, leaving no feasible path to break even or to achieve profitability. Five respondents discussed the potential of losing land to floodwaters, though only two were sufficiently worried to select flood insurance.

Several of the interviewees who selected the hypothetical drought insurance mentioned their fear that with drought, “one loses everything, and with flood, at least in the high areas I can recuperate.” Another
Figure 1 Insurance Choice, Perceptions of Risk and Loss, and Changes in Frequency for Floods and Droughts by Interviewees in Study 2

respondent stated that he would “Always [buy] drought [insurance], because in floods there is loss from flooded land, but there is better yield in the higher lands from additional water. In a drought, there is nothing. There is no yield and the animals suffer. It’s just bad.” While four respondents mentioned total loss from drought, only one highlighted total loss from flood and felt it was a bigger economic danger. When asked whether floods or droughts had increased in frequency over the past two decades, six answered “floods” while another six said “droughts.” We asked this question to ascertain whether our interviewees were aware of the increasing level of groundwater, which has the potential to increase the probability of flooding and hence the likelihood of small but more frequent losses. Three were not sure and chose not to respond.

What is not evident from the above responses, however, is the underlying motivation for avoiding economic losses from droughts—is it simply a concern with economic sustainability, or are other factors involved? We asked our respondents to elaborate what occurred during droughts. The most common reply referred to the total suffering inflicted upon all in a drought—they expressed concern about their inability to take care of their employees, families, or even animals. Although the explicitly stated reason here is economic in nature, the prevention of a monetary loss, preliminary evidence suggests that implicit social concerns underlie that economic focus.

The respondents did not just compare losses between drought and flood, but also engaged in social comparison and concern with their own expectations to define a loss. One interviewee discussed loss in terms of not gaining as much as others: “I would prefer if everyone gained…not that I gain and another loses…” Another respondent described loss in terms of not getting expected results, particularly in comparison
to others, and the fear this created: “That I lost what I expected one year, I see that from this perspective, that is the loss I have even if I made money”. Thus the perception of loss or potential loss is perhaps more important than the actual amount of loss itself. Here too, the underlying reason for this concern is the inability to meet obligations for family and employees. Concern with economic loss appears linked to the consequences of that loss on other variables, particularly social ones. This corresponds to much of the work in psychology on decision making under risk (e.g., prospect theory) and the role of emotions in driving priorities and tradeoffs when making choices (Lowenstein et al. 2001).

**Conclusion**

Although we find that decision makers in Argentine agribusinesses assign similar importance ratings to economic, environmental, and social goals, when asked to reflect on the relative importance in a set of tradeoffs, they do not treat the various dimensions of sustainability in equal terms. We expected economic concerns to dominate environmental and social considerations mainly because money spent at start of the cropping cycle on agricultural inputs such as seeds, is thought of as a loss to be recouped, and losses, psychologically, loom “larger.” We see this in our first study, where despite explicit statements of equal consideration of all three goals, the points assigned do vary by category. Similarly, in the second study, although economic and environmental factors are mentioned with equal frequency, economic considerations are consistently ranked higher. However, probing deeper through interviews and scenarios reveals that the economic focus is often motivated by a concern for fulfilling social obligations to family and employees, as well as doing well in social comparisons.

In our interviews that informed the second study, we found that the risk of drought narratives reveals a dominant loss frame, perhaps because of the initial outlay of funds, making the potential for loss a key decision parameter. It is further the case that economic, environmental, and social sustainability are framed in terms of losses, often of total versus partial impairment, that affect how decisions and tradeoffs are understood. While assessing potential losses through measurement may be challenging, our respondents found ways to communicate their loss perceptions in ways that complicate a separation of economy, environment, and society. Losses for them are relational and relative, not absolute, and include animals and neighbors, as well as social status. Others have found that relative positioning is important for loss aversion (Gill & Prowse, 2012), though our study suggests that it is not just about competition, but may even be about social standing and self-concept (e.g., being someone who fulfills obligations). Understanding decisions may depend on loss perceptions, which in turn may be more difficult to quantify due to the social implications of losses.

We also find business owners are concerned about losing local knowledge and livelihoods, though these appear to be of lower importance. Perhaps the importance ratings reflect an aspiration to value equally all goal types, or are simply social impression management, and therefore “cheap talk.” Brown and colleagues (2009) argue that the accounting focus of “the triple bottom line” prioritizes measurements usually unavailable for environmental or social aspects, providing no easy way to incorporate them into planning. It is as if, because the social elements are not the measured reasons, they are also not stated as top-of-mind, but are not entirely missing either. Perhaps this is an area for future research and, drawing on work in behavioral economics, possible opportunities for policy-based “nudges” for increasing social responsibility.

Our research suggests that Argentine agribusiness owners consider economic,
environmental, and social factors in their decision making, though these are not easily separable, as when economic outcomes are desired for social reasons. Other research suggests that some indicators, like aesthetics or community health, may be linked to economic, environmental, and social concerns at the same time (Santiago-Brown et al. 2015). In our study, examining ideas about losses helps clarify these relationships by highlighting the perceived relative nature of losses (to past or expected outcomes of selves or others) and the importance of meeting obligations for ideas about loss across economic and environmental considerations.

These results challenge the idea of a triple bottom line as a set of separate issues—Argentine agribusiness owners clearly see them as integrated. Talking about losses provides a sense of how these might be integrated, but also suggest next steps for this research. First, the focus on loss as a dominant frame in the decision-making process may highlight a deeper psychological variable. It may not be the amount of the loss that matters, but its impact on the decision maker and others, and its degree of controllability. Thus, even as floods become more likely, and multiple years of floods might result in greater losses than those caused by a drought, decision makers may be focusing on droughts as a cause for greater concern because they perceive the accompanying circumstances as beyond their influence and droughts leave them unable to meet immediate social obligations. Understanding how loss is perceived, both economically and psychologically, becomes an important next step.

A second research direction is to empirically test whether the immediate economic focus is indeed supported by a second order of logic that includes environmental and social concerns. The open-ended responses provide some preliminary evidence, but subsequent research is necessary. Understanding the decision process both behaviorally and motivationally will allow us to grasp more fully how to use the triple bottom line as a tool for creating sustainable organizations and, eventually, a sustainable society.

Third, the impact of the temporal scale of the decisions and quantifiable nature of the outcomes needs to be clearly delineated. When approaching a decision, temporal framing influences the options evaluated and strategies pursued. Asked to consider their decision cycle, our participants focused on an annual timeframe since that is the average length for agribusiness decisions, and also the average period for relatively quantifiable economic outcomes. Environmental and social outcomes and consequences are not only harder to quantify and measure, they frequently lag behind the annual economic cycle (Boström, 2012). This begs the question of whether underlying motivations, such as concern with fulfilling social obligations, would manifest themselves explicitly if the decision timeframe were longer—say five to ten years. The importance of social elements for decision making also highlights the continuing challenge to measure, calculate, and assess the triple bottom line in a more integrated manner (Norman & McDonald, 2004).

In conclusion, sustainability needs to encompass all three aspects: economic, environmental, and social. Although there appears to be a hierarchy in descriptions of the decision process, discussions of loss bring elements together in new and provocative ways. Understanding the multi-faceted manifestations of sustainability that may not be sufficiently captured or resolved by a simple tripartite definition is a vital next step. This research illustrates that decision makers already view the various dimensions as more integrated than the conventional demarcation suggests. There are, however, many challenges in how we handle the integrated considerations. Moreover, if the final choice, due to metrics or timescales, places one dimension above others, then the value...
derived from an integrated approach is diminished. Perhaps the perception of losses gives us a window into how the triple bottom line and other contextual variables are currently integrated by agribusiness owners and others.

The interdependencies among environmental, economic, and social goals has implications for how agriculturalists and others might envision and pursue sustainability at various scales for the creation of agricultural sustainability, or sustainability more broadly. Although sustainability is best conceptualized at the level of the collective (be it organizations or communities), decision makers are frequently individuals making choices that have interdependent consequences. Here, psychological motivations that govern how interdependencies are incorporated within an individual choice process affect the creation of sustainable agribusinesses in particular. This lesson likely applies to a variety of businesses, balancing their own sets of related variables. Understanding business decisions regarding sustainability requires a focus on how goals are understood within specific contexts of uncertainties, potential losses, and obligations.

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