

# Information and Market Failure in Local Economic Development: A New Role for Universities?

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*One of the crucial assumptions regarding the efficiency of the private market is that all involved actors have full information about market opportunities, costs, and benefits. However, this assumption is likely to be only partially fulfilled in many local economic development efforts. In fact, those who stand to benefit most from such efforts may be least able to secure critical information regarding development possibilities. In contrast to most publicly supported top-down initiatives, university researchers may more effectively enhance local development by focusing on the provision and analysis of information to private participants. This article first explores the twin potential information gaps involved in regional industrial development that may affect both private and social investment perspectives. The recent efforts to add value to the highly vulnerable agricultural sector of Colorado's San Luis Valley then highlight the potential direct economic and indirect methodological impact of such assistance.*

One of the crucial assumptions regarding market efficiency is that all involved actors have full information about opportunities, costs, and benefits. However, particularly in local economic development efforts, this assumption is at best often only partially fulfilled. Information about market opportunities may be particularly lacking in lagging regions, resulting in regressive forms of market failure. Given such a situation, the public provision and analysis of information itself may most effectively promote local economic development. In essence, such an approach describes a new form of public-private partnership, in which each party concentrates on its relative advantage. Publicly supported actors can organize and analyze channels of economic information, whereas private actors go on to construct and manage the most promising entrepreneurial projects based on these findings.

Informational gaps can produce two related situations in which productive private and/or social investment may be ignored due to an incomplete understanding of relative returns. In the first, purely private case, incomplete information about market opportunities may lead private entrepreneurs to overlook profitable investments. In the second case, lack of information about significant social spillovers may make otherwise unattractive private projects social welfare enhancing, which may provide a rationale for the use of public funds. In both cases, information can have significant public good characteristics.

Universities may be particularly well placed to play such an informational and analytical role. An integral part of this research is the active development and documentation of such an information-bridging project, which is helping establish a dedicated micromalting facility to provide Colorado's microbreweries with consistent high-quality ingredients at competitive prices. An important facet of this academic support taps the unique synergies offered by higher education institutions in combining their varied analytical resources.

This article's first section describes possible market failures and resultant private entrepreneur inaction due to crucial information gaps. The analysis further explores likely divergences between social and private rates of return. Both situations invite scholars to close such gaps and extend the horizons of potential business activity. Given these considerations, the second section then applies this approach to a case study: the current development of a Colorado micromalting operation. In particular, the discussion highlights the role of applied academic research to bridge information gaps and elucidate social returns. The consequent public/academic/private cooperation may yield significant new growth poles, particularly in distressed areas, as well as flexible new tools for evaluating their impact.

## **MARKET FAILURES AND MARGINALIZATION IN REGIONAL DEVELOPMENT**

### **Lagging Regions Lacking Information**

The ability of market capitalists to detect and exploit potential profit opportunities is proven on a daily basis. The modern theories of arbitrage and efficient markets owe their foundations to the constant worldwide hunt for additional wealth. The recent evolution and growth of international currency speculation takes advantage of minute profit opportunities based on flows of economic information and changes in policy. Yet, the abilities of private agents to uncover lucrative returns in any given market depend largely on the "thickness" of transactions in that market. Although global currency markets are constantly scrutinized by trained professionals, a localized market may benefit only from occasional passing surveys. Nevertheless, such isolated business markets may in fact be considerably more complex than their relatively transparent global brethren. A web of local politics, history, and culture can make regional markets opaque.

Capital and its agents tend to focus on regions that have already proved themselves through clear opportunities and solid rates of return. In particular, the economies of urban areas are considerably thicker and more dynamic than are rural economies, even in a relative sense, which accounts in part for their well-documented urbanization economies and subsequent explosive growth rates (Krugman, 1991, 1996). The distance of alternative markets from the core areas of economic activity put them at a disadvantage for the diffusion of innovation and potential growth (Ward & Hite, 1996).

Even minor gaps in information can lead to profitable private investment opportunities being ignored. More localized business opportunities are explored by a limited number of potential entrepreneurs who are constrained by capital availability, risk aversion, and time horizons. Investor uncertainty, due to the lack of local understanding of such markets, could lead to a self-reinforcing pattern of market neglect and continued ignorance. Such path dependence in regional entrepreneurship may partially account for the widening gap between different regions' economic performance.

Particularly given its influential role in such investment decisions, information is clearly a public good (e.g., Stigler, 1961). Regional information and analysis could be accessed (non-excludability) and consumed (nonrivalry) by all to achieve maximum benefits through private entrepreneurship. The problem with such informational public goods is that no private agent has an incentive to invest in its acquisition and analysis because its rents and economies of scale cannot be captured by the investing agent due to the information's same broad consumptive and accessibility characteristics (Zeckhauser, 1996). Public provision and analysis of such information is thus supported on grounds of efficiency. Such a public goods rationale already motivates federal government provision of national statistics.

The likelihood of significant social returns outweighing private costs is even greater in such economically challenged areas. Private actors will make investments based only on private returns outweighing private costs at a level above current alternative market opportunities. Yet, otherwise unattractive investments may in fact yield high social rates of return when the total impact on a local economy is calculated. Creating internal links and exploiting local comparative advantages

are likely to produce related sparks of development in associated sectors, providing multiplied momentum to a moribund economy. Export-base analyses emphasize the potential multiplied returns to an otherwise vulnerable and dependent local economy by emphasizing the internal cycles of spending that occur with fresh injections of external payments (Isserman, 1980). Considerable labor and other factor market slackness implies lower input (and opportunity) costs for initiating such benevolent cycles (Bartik, 1991).

Spillover benefits to the community and the local treasury from successful pioneering private entrepreneurs may be widely shared, particularly in the case of previously lagging areas (e.g., older urban industrial districts, in Weiler, in press). A full social accounting of private investment may indicate significant social returns inherent in a project. In such a case, information analysis is again critical—this time to justify possible public support of private investment that substantially enhances social welfare. The lack of these information-related public goods, which could fill gaps in either private or social investment behavior, can result in investor reluctance in already marginalized areas, cementing their economic vulnerabilities.

### **Informational Market Failures: An Active Role for Development Academics?**

Potentially lucrative investment opportunities may be overlooked by the market. In effect, the constraints discussed constitute twin market failures. Lack of information may stymie otherwise viable private investment, or it may obscure socially beneficial projects with sizable social returns in addition to limited private returns. Although unusual in form, these effects are indeed market failures, in that free market outcomes can be suboptimal from both private and social welfare perspectives (Bartik, 1990). Such divergences are likely to be particularly acute in areas that face economic difficulties, which then are further disadvantaged through the “thinning” of their transactions. Yet, the same characteristics that make such areas vulnerable to self-reinforcing patterns of inattention also tend to boost the net social benefits produced by reviving their development due precisely to these regions’ marginalization.

Especially given the hysteresis of such longer term local economic difficulties, market failures in these cases may be most effectively addressed by outside support, on both efficiency and equity grounds. Traditional top-down bureaucratic solutions to social problems—whereby outside agents establish new but foreign structures to bridge market gaps, such as public housing or welfare—are seen as second best solutions because they do not directly address the source of the economic dislocation (Asch & Seneca, 1989). In contrast, the noted local-regional difficulties may have a first best solution by identifying and correcting the source of the problems. Information and social calculus may be the missing elements to optimal (private and public) investment patterns. The provision of information and the calculation of social rates of return can consequently be a particularly productive research focus.

Academics may be uniquely placed to play such a role in regional development. Having the benefit of both a general (“forest”) and detailed (“trees”) perspective, university-based individuals or groups may be able to gather a more complete perspective of local economies and their opportunities. In contrast to the traditional view of planning development patterns, scholars could focus on organizing and synthesizing information on a local and regional basis, identifying promising opportunities and disseminating this information to private and public agents. Synergies between research and teaching, particularly in terms of involving students in applied topics, further highlight the benefits of a university role. Universities offer both a broad and deep range of analytical resources with which to understand particular markets, industries, and/or regions; land-grant universities, in fact, were founded to pursue such goals. Academic freedom and detachment may be particularly useful as financial, political, and other potentially conflicting interests attempt to influence outcomes away from their social optima.

It may be argued that political economy considerations, where different regions and/or states compete for lucrative investment projects, could hamper such efforts’ efficiency contributions (Hansen, 1993; Rubin, 1988). Firms know that they can and do generally force matching incentive packages between competing regions (Jenn & Nourzad, 1995). Yet, the proposed approach does

not focus on incentives; it focuses rather on information. One of the key rationales for the involvement of academics, with their imperfect but still unparalleled level of intellectual freedom, is that they can in fact provide more objective sources of regional information analysis. In contrast to an arms race of incentives, an arms race of information between localities could improve efficiency by promoting socially optimal location choices through better comparative information. In fact, the noted focus on marginalized areas may reveal the hidden potential of previously ignored regions.

In particular, the provision of information on both private and social rates of return may serve to spark beneficial entrepreneurship. First, adequate information on private costs and benefits in otherwise thin markets may be enough to motivate private investors, promoting private market efficiency. Second, high social rates of return may provide a rationale for the public support of otherwise private ventures, resulting in socially beneficial entrepreneurship. In both scenarios, such information-focused projects would promote efficient social welfare maximization. In addition, the methodologies developed for the analysis of particular projects may provide a lasting framework for evaluating future ventures.

Contributions to equity simply add to the noted efficiency improvements because information gaps often result directly from regional economic marginalization. Areas with thin markets, high uncertainty, and poor information may face these difficulties precisely because of their vulnerable status. Thus, addressing the noted information market failures (efficiency) generally also targets those areas and/or people who face stagnating economic conditions (equity), yielding research with unique economies of scope.

#### **CASE STUDY: THE DEVELOPMENT OF A COLORADO MICROMALTING INDUSTRY**

The supply-demand match between the San Luis Valley's productive agricultural capacities and the input requirements of Colorado's microbrewing industry appears propitious. Such a link could not have been envisaged even 5 years ago because Colorado brews were still finding an equilibrium structure, scale, and character. The industry is now maturing, with a significant shakeout behind it, and features a steadily rising internal and export demand for the products of the remaining breweries. At the same time, the San Luis Valley would greatly benefit from opportunities to add value to its productive but narrow agricultural sector.

This section explores the situation of both the malting and brewing industries along with the prospects for sectoral linkage. The first subsection summarizes the situations of the Colorado microbrews (potential demand), the San Luis Valley (potential supply), and the micromalting link between the two, which may produce significant private and social returns. The second subsection, reviewing the project's marketing study, private investor returns, and social benefit/cost analysis (BCA) surveys the analytical steps used to bridge informational gaps.

##### **Linking Colorado Brewing and the Struggling San Luis Valley**

*The microbrews and their macro malt.* The Colorado microbrewing industry has solidified around a set of core characteristics and firms and has developed a respected reputation both inside and outside the state. The astronomical boom of the industry's early years has subsided, and less competitive breweries have closed. Those that remain, however, have uncovered and exploited a uniquely high-margin niche in the otherwise commoditized low-margin/high-volume beer industry (Sutton, 1991). As a group, the Colorado microbreweries have developed a major regional competitive advantage, alongside those in the Pacific Northwest and the San Francisco Bay area (Cooper, 1994). However, they remain vulnerable to quality and price variations of their inputs.

The key to this market niche has been and continues to be the development of uniquely flavorful beers, brewed consistently and consumed fresh. To maintain this valuable market, quality consistency is crucial; thus, consistent quality ingredients are critical. Unlike the major beer producers, which aim for lighter tasting beers and can blend varying quality batches to achieve the consistency

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they need, microbrews’ strong flavor profiles are their edge. Yet, these characteristics also make them vulnerable because perceived variation in their vaunted flavors could destroy their narrow market. In contrast to the larger breweries, their size also prevents them from blending to achieve desired consistency.

The primary ingredient for all beer is malted barley, which is also the predominant factor in flavor. The malting process prepares the grain for brewing through a delicate process of germination and roasting. The finished product of this procedure gains considerable value while also losing much of its weight. The processing characteristics of the malt industry lead to considerable economies of scale, with its sizable capital and infrastructure needs. The inevitable consolidation of the industry has thus led to a handful of major (“macro”) malting companies, supplying everyone from the local homebrew store to Anheuser-Busch. These largely West Coast–based operations bring raw barley to their plants from farms extending across the Northern Plains, then ship the malted product to the dispersed buyers.

Given this market structure for their malt input, microbrewers face both quality and cost problems. Given the range and scale of demand, quality levels and consistency have suffered—a situation that has led to increasingly widespread dissatisfaction among microbrewers. Furthermore, given the still high weight-to-value ratio of the malt, freight charges can represent up to 35% of delivered cost from the traditional sources in the Pacific Northwest. As the captive tail of a large macro-malt market, microbrewers are also highly vulnerable to price discrimination. Delivered malt prices vary among microbrewers alone by well more than 100%, in inverse relation to brewery size.

*The valley.* The San Luis Valley, located in the sparsely populated south-central part of Colorado, is one of the largest (more than 100 miles long and 50 miles wide) alpine valleys in the world. The Sangre de Cristo range to the east and the San Juan range to the west ring the Valley’s 8,000-foot elevation; a half dozen “fourteeners” (14,000-foot peaks) are visible from its floor. Its agricultural productivity can be up to 50% higher than for alternative sites (*Colorado Agricultural Statistics*, 1998). It was the setting for the state’s modern historical roots, a blending of Mexican settlers and frontier American trappers, and remains one of the few pockets of cultural blending in an otherwise homogeneous state. Both its human and natural contexts are uniquely intriguing and challenging.

Yet, despite its seeming advantages, the San Luis Valley remains one of the poorest areas not only of the state but of the entire nation. Poverty and unemployment rates consistently rank the highest in Colorado, and the per capita income levels are consistently among the lowest. The persistence of economic difficulties is striking; the area has faced one of the highest concentrations of poverty in the country since 1950. This situation can be quickly traced to its industrial structure—or lack of one. It began as an extraordinarily fertile agricultural area and remains so today. However, few forward (e.g., processing) or backward (e.g., technical inputs) linkages, which could provide some much-needed local value added, have developed to date. It is a classic case of a primary commodity-dependent economy, whose fortunes ride on the market price for its major crops: potatoes, barley, and alfalfa.

Ironically, the valley’s very position as one of the most productive, high-yielding, high-quality farming zones in the country threatens its economic roots. Recently, in an effort to take advantage of high yields, the area’s cultivation has shifted largely toward potatoes: a low-margin and highly price-variable crop. The valley is just large enough to depress its own prices when harvests are bountiful but still too small to effectively corner a market controlled by Idaho. Such a scenario took place in 1997, when farmers were forced to throw about 50,000 tons of potatoes into a local landfill due to overproduction and consequent sinking prices. The need for alternatives, with higher and less variable margins, has never been greater.

Meanwhile, the San Luis Valley has been growing high-yield, high-quality barley for Coors, the major macrobrewer in the state, for more than 50 years. Coors contracts raw grain delivery with individual farmers and ships it to its plant in Golden for processing. No value added actually occurs in the valley itself. Barley has become another facet of the area’s economic dependency.

*The micromalting link.* The potential link between the San Luis Valley’s capacities and the needs of the state’s microbrewing industry is straightforward. The state’s microbrewers could

switch from their traditional macrosources of malt to a micromalting plant based in the valley. Freight costs would be greatly reduced, given the valley's proximity and outstanding transport (road and rail) links to the state's brewing centers. Locating near the barley farms is transport cost-effective, given that processing reduces bulk/weight while adding value. Savings on freight costs coupled with greater quality control would make such a micromalting plant competitive by offsetting the disadvantages of its smaller scale. The plant's delivered costs could be translated into stable competitive prices and also reduce buyer vulnerability to price discrimination. Furthermore, the valley and its envisaged plant could eventually provide malted spring wheat at the specifications that the industry requires as well as other specialty malts. Introducing these additional products would also effectively increase the plant's scale, reducing average costs further.

Quality has always been a hallmark of the valley's barley. A number of different varieties have been extensively field tested by Colorado State's Agricultural Experiment Station on site; farmers' successful introduction of different types into crop rotations is thus considerably facilitated. Eventual testing and expansion of barley varieties, based on demand evolutions, could be accommodated through the university as well. In addition, a quality assurance lab in the micromalting plant itself could provide precise statistics on malt characteristics and thereby assist in maximizing beer production efficiency.

Yet this propitious link has not yet been made, despite an apparently promising scenario. First, there is the clear potential for a privately profitable local malting operation. Second, such a link would effectively create a benevolent internal economic loop for funds that had previously been leaked out of state. Given this multiplier-enhancing internal feedback as well as the sizable social spillovers in a currently marginalized region, the (local and statewide) social rates of return are likely to be considerably higher than the private returns.

However, information about both the private and social potential of this link is lacking. With the inherent high fixed costs of investing in a new facility, compared to the low short-run marginal costs of existing supplies, no one really considered the possibility of such an intrastate economic bridge. The brewers and the farmers were facing restructuring in their own markets, which required their full attention, and none had experience with malting, the crucial intermediary process. Even if they had, the need for considerable cost-benefit analysis, the necessary cooperative arrangements to provide sufficient scale, and the high level of economic spillovers that private investors may not capture make such an individual foray unlikely. Finally, cultural gaps between the valley, the brewers, and government are wide and have never been traversed in this fashion before. Thus, a coordinator who is distanced from each group's vested interests must initiate a cycle of communication, further understanding, and workable trust.

Academics, in particular, have the resources and freedom to gather the data and undertake crucial analyses, investigate the possibilities of cooperative arrangements for both sides, and involve the public sector where significant spillover benefits are likely to occur. Although over the course of such analyses a given project may prove both privately and socially unprofitable, many others could yield sizable, ongoing, and multiplied benefits to the entire state. The land-grant status of Colorado State, with its range of resources across both the economic and agronomic spheres, makes the involvement of its staff perhaps particularly fitting. Departments from economics to crop sciences to public relations to business to extension all contributed their individual expertise to the research.

### Analytical Steps

Three distinct stages of analytical support can be distinguished: marketing study, private investor returns, and social BCA. The first measures the market for the plant's product. If the latter proves to be promising, evaluation of private investor returns would provide information for private investment targets and rate-of-return criteria. Finally, analysis of social welfare impacts would be the basis for evaluating the potential justification for state support.

*The market.* Once the sketch of the concept was formed, the level of interest by both the demand (brewers) and supply (farmers) sides of the market needed to be evaluated. Given his experience with the Colorado brewing industry gleaned from urban redevelopment research (Weiler, in press),

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the project coordinator contacted brewers and owners across the state to informally assess the state of satisfaction with current malt suppliers as well as the potential interest in local provision of consistent high-quality base malt. Given the noted disgruntlement of the Colorado microbrewers, stemming from difficulties with malt quality and consistency, the notion of a local supply for the bulk of the product's raw materials was greeted with enthusiasm. The combined attractions of potential (freight) cost savings, increased control over supply characteristics, and marketing possibilities promoting ingredient quality were considerable. As one of the largest microbrewers noted, the only local ingredient at this point was the water.

Relying on decade-old contacts in the San Luis Valley to query a cross section of farming interests, the project coordinator found a similarly positive response emanating from the potential growers. Given the particularly bountiful potato harvest the previous season, which led to a disastrous fall in prices, the century-old vulnerability of the agricultural sector had been again painfully underlined. The need for value-added processing was unquestioned. However, difficulties in competing with the established industry poles and attracting investor interest had continually hampered the industrializing effort. The notion of positively contributing high-quality local products (barley) to an increasingly high-profile state industry (microbrewing) was especially welcome.

The next step was to ascertain the exact types and specifications of base malts desired. In probably the most significant development of the project, an industry contact with malting expertise—having heard of the nascent project through the state brewing network—donated his interest, expertise, and humor to a project that acquired critical credibility and technical mastery in a single stroke. The two researchers developed and sample tested a short but comprehensive malt survey, which was then mailed to the 32 state microbrewers with production of greater than 1,000 barrels (slightly more than 30,000 gallons) a year. The four largest microbreweries were already, at this early stage, pulled into the coordinating process, given their stature, experience, and scale within the industry; a malting facility could be justified with their participation alone. They in turn were those likely to gain most from the success of the project and thus also had the keenest interest from the outset.

With an initial survey response rate greater than two thirds, the microbrewery sector reiterated its support of the concept. Survey results clearly outlined the brewers' specific malt needs, which could be met with a state-based micromalting facility. However, the decision to switch to local malt supply remained a business one. The necessary long-term commitment to Colorado's micromalting industry, on which the project hinged, must be based on a cost-quality combination superior to current sources. Although support of an economically vulnerable region was a major benefit of the project and the brewers' participation, it necessarily remained peripheral to the increasingly competitive microbrewing industry. Furthermore, the long-term viability of the project had to be based on a competitive edge through both quality and cost. High weight-to-value ratio and the substantial shipping costs inherent in malt provision from the Northwest created a promising margin of opportunity.

*Private investor returns.* Given the results of the marketing study, a meeting of the representatives from the microbreweries, the valley, and the coordinating staff agreed that the project had significant investment promise. An initial model estimated a rough income statement for the first 5 years to determine the general feasibility of such a plant. The results indicated that the plant was feasible, which led to a more detailed viability study.

This viability study was developed around the key cost and quality characteristics revealed in the market survey. Facility bids that conformed to the project's malting requirements were requested to specify capital costs and structure plant operations. An organizational structure was developed, which included management and worker responsibilities along with position-specific skill requirements. Focused research efforts determined the critical costs involved in the provision of scarce local water supplies, packaging, and transportation. Given the food-grade nature of the product, an environmentally conscious plant with low waste emissions, water reclamation pond, and recycling of spent materials could easily and cost-effectively be implemented.

The final viability study, based on the analysis of the collected information, details income statements for the 20-year operating horizon of the plant, cash-flow analysis, and financing scenarios. Product demand was based on figures for Colorado alone, although there is already sizable

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interest in such a facility by the state's Four Corner neighbors. Although such expansion is likely once experience and reputation in quality consistency is established, an initial state-specific focus seems in the best long-term interest of both consistency and quality. This narrow focus should also reduce the possibility of predatory pricing by the large malt suppliers, who may not mind losing marginal and often dissatisfied customers to a single-state economic development project. Nevertheless, a predatory pricing scenario is included as a lowest bound estimate for the plant's viability.

Realistic private rates of return over the project's 20-year life range around 20%, with an 8-to-10-year payback period. The end of this phase "informing" private investment interests also led to public revelation of the project and its potential through the university relations office. Prior confidentiality was designed to avoid excessive expectations, particularly in the valley itself. The viability study was distributed to potential investors, many of whom were attracted by the state and national media coverage. The organization of an investment and management group is currently under way.

**Social BCA.** The social BCA then focuses on a comparison of broader social returns over the private returns calculated above. Beyond the narrow revenues and costs accruing to private investors, such a facility is likely to have both short- and long-run effects on the local economy. In the short run, plant construction and associated increased demands for local materials and labor introduce new spending into the local economy. In the longer term, the stable income provided to the participating barley growers as well as the staff of the local plant, along with any dividend/profits accruing to local investors, will add a continuing stream of export income to the valley. Increased demand to local suppliers (e.g., farming inputs) and nonbasic industries (e.g., retail trade and services) with associated increases in household spending will multiply new export earnings through the local economy as well (Richardson, 1972). Social accounting matrix techniques (e.g., IMPLAN, 1996), including fiscal components to ascertain public revenue and expenditure flows, can help estimate these impacts.

Social benefits and costs can be measured as direct benefits (costs) of a project plus any noncanceling secondary benefits (costs). Direct benefits are measured as the willingness to pay for project output. In this case, the microbrewers' willingness to pay for malted barley from the San Luis Valley micromalting plant is a direct benefit. Secondary benefits are the result of extra production, income, and employment due to the expansion of demand created by the project (Zerbe & Dively, 1994). Industries that interact with micromalting facility suppliers, such as input sellers to barley farmers, expand their output. This additional output generates labor and proprietor income that may in part be used for spending on additional goods and services. Secondary benefits are accounted for only when locally accessible slack resources, such as labor and capital, exist. Otherwise, induced production crowds out current production, and a canceling-out effect occurs.

Social costs are also divided into direct and indirect or secondary effects. Direct social costs are the opportunity costs of project output. For the micromalting facility, construction, land, labor, resource use, and administrative costs represent the opportunity costs of production. Secondary costs incorporate the indirect reduction of other firms' output or household consumption. The micromalting facility is not expected to generate any such peripheral costs within the state study area or to generate significant negative externalities, such as water or air pollution. Although not quantified in the current study, the introduction of a water-recycling pond may contribute positively to the local environment in support of the valley's importance in avian flyway patterns. Given the lack of significant market externalities, market prices reflect social values, and no need exists for shadow pricing.

Several analytical refinements can yield further insights. As noted, the new income will yield direct and indirect employment effects, which need to be balanced with the opportunity cost of labor in its current positions (Wiewel, Persky, & Felsenstein, 1995). Because the valley currently has high unemployment, such distortions are likely to be far less than if the plant were located in the tight labor market conditions of the Denver metropolitan area. Regional modeling packages also tend to assume rough regional purchase coefficients (RPCs) and proprietor income-profit flows based on national benchmarks (McKean, Taylor, Alward, & Young, in press). In the case of this local resource-based project, local supply-demand pooling (where all resources are locally purchased, if possible) and geographically identified profit flows can be incorporated as more realistic

assumptions. The viability of alternative locations should be considered as well to ensure the optimality of potential sites.

A number of key issues regarding the broader benefits and costs on the state and national economies need to be understood, if not directly incorporated, in the studies. Local and state impacts are the focus here, but broader effects may be significant in particular industries and regions outside the state. Microbrewers currently import roughly \$3 million per year for their malt, which would now flow directly into the state economy; improved microbrewery efficiency, from closer relations with their key input, may be a further fringe benefit. Yet, from the national perspective, jobs gained in Colorado's new micromalting industry may be lost elsewhere in the economy through reductions in demand in existing farms and malting plants. State gains thus need to be considered in relation to national losses. Again, however, increased information regarding peripheral regions may help maximize global efficiency by highlighting previously ignored sites with lower opportunity cost and higher net social benefits.

Distributional issues can also be important. In this case, the primary beneficiaries of the project are likely to be the valley's farmers, the microbrewers, and (other) investors. Although the farmers are not particularly wealthy compared to other farmers elsewhere, they are better off than much of the valley's landless labor force. However, spillovers to the local economy of their increased and more secure income will tend to support the lower tier service and trade industries. The microbrewers are generally more affluent. Finally, the opportunity costs of the academics' time and resources along with explicit public funding support require accounting. Taxes are the basis for the availability of all these resources. Average taxpayers might be indirectly subsidizing more affluent interests, although that appears unlikely in the case of the micromalting project.

Ideally, the objective study of economic development needs to be divorced from its funding, which again highlights the unique role that universities can play. However, the divergence between private and social returns for individual projects themselves can help guide eventual public sector involvement for such projects. This type of support is currently decided on a more ad hoc basis. State support tends to come principally in the form of interest subsidies and loan guarantees, which effectively reduce the amortization burden of such significant (approximately \$5 million) up-front capital investments. In addition, infrastructural development in roads and utilities would be funded by the state. Finally, Enterprise Zone credits, which are particularly advantageous for those adding value to the state's agricultural sector, would produce tax credits for the first years of operations.

The project should also deliver less direct but potentially broader demonstration and methodological benefits. If successful, the San Luis Valley and similar areas considering value-added initiatives can use the micromalting project as an example of such efforts' possibilities. Highlighting the undervalued potential of the San Luis Valley is likely to be an important outcome in itself, given its geographic and market isolation. The private versus social BCA calculus developed for this particular application could easily be adapted for use in other scenarios. This methodology could then provide better justification for the prioritizing of public funds in economic development efforts. A more complete understanding of both narrow private and broader social returns may be especially important in properly guiding the use of public monies for projects with considerable social spillover benefits.

## CONCLUSION

Establishing bridges between regions and industries may yield significant benefits to both private industry and a particular region's economies. However, the potential dual impact of informational gaps may impede profitable private and social investments. First, the thinness of such a peripheral market may obscure the private potential of such investment. The lack of information as well as the self-reinforcing cycle of marginalization noted above could hide lucrative private returns. Second, the likely significant social spillovers in addition to private returns, due precisely to such an area's marginalization and resultant slack resources, could make social returns considerably greater. Such a situation could justify public support of private investment, which can highlight promising markets in otherwise ignored regions. Public funding decisions are currently more

often based on the public choice influences of political economy rather than on the implicit public interest in maximizing net social benefits (Blair, 1995).

These twin private and social information market failures appear relevant in the case study linkage between San Luis Valley agriculture and the Colorado microbrewing industry. Although the micromalting project's concept seems to fit current economic and sectoral realities, the considerable amount of analysis in a very thin market makes the realization of such an effort unlikely without external assistance. The crucial missing link is information along with a wide capacity, from economics to crop science to water law, both to analyze each of the project's components and to synthesize the composite whole.

The fact that the Colorado micromalting project uncovered above-market private rates of return provides strong evidence for the relevance of informational market failure. Academics, particularly at multifaceted and outreach-oriented institutions such as land-grant universities, may be especially well placed to discern market links and determine whether particular projects may lead to significant private and social returns. Finally, such efforts may also have broader methodological spillovers as tools are developed to provide more thorough analyses of future projects with significant social development impact.

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