Values, Theory, Observation and Faith in Environmental Economics: An Examination of the Growth Follows Amenities Doctrine

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The Growth Follows Amenities Doctrine

The West is changing, which greatly concerns those who want it to stay the same, to maintain a character and culture closely linked to commodity service flows from the natural environment, e.g., agriculture, wood products, hydropower, mining, and fishing and hunting. But not all resist change in the West. In fact, many advocate changes toward a so-called New West, characterized by a high quality of life and economic prosperity uncoupled from commodity extraction.[1]

The Growth Follows Amenities Doctrine (GrowthFAD) supports this New West advocacy. Like all doctrine, GrowthFAD combines values, theory, empirical observation and faith in support of an idea. In this case the idea is that economic prosperity is linked to amenity flows from the natural environment, directly through consumption of what is often called in mainstream economics "non-wage benefits," and indirectly through attraction of productive resources, especially labor.[2] Furthermore, because commodity extraction reduces amenities, policy for regional growth should curtail extraction, or at the very least, not mourn its natural demise.

In the following, the author touches on values, empirical observation, theory and faith in an attempt to shed some light on GrowthFAD, one of the most interesting environmental/economic doctrines in some time.

GrowthFAD and Green Values

In their hearts, believers in GrowthFAD have Green values, but for rhetorical reasons these often give way to standard economic argument. To a Green, actions are good if they protect or improve the environment, promote social justice, encourage small-scale (local) decision making, and do no violence.[3]

The first of the four "Green pillars" is the most relevant here. Greens are more likely to lift the natural environment from its role as a storehouse

of services for humans and imbue it with intrinsic value independent of human utility. It is not just a coincidence that proponents of ecosystem management are fervent espousers of GrowthFAD.

But social justice and decentralization also play a role in GrowthFAD. Extraction reduces environmental quality, enriches those far from the resource site at the expense of local residents, and sacrifices local control to unstable demands from outside the region. For this reason, any theory of regional economic growth based on demand from outside the region is suspect, *a priori*. Export base theory is particularly egregious.

Also, many Greens would consider some forms of logging, mining, agriculture and electricity generation violent acts against nature, which, in turn, co-evolve with a labor force at home with violence. Participants in these industries are, after all, a legacy of the Old West, at home with revolvers and rifles.

In a more holistic sense, Greens espouse a oneness with nature, which is violated by modern industrial practices. In current debates, this manifests itself partly through a romantic attachment to western civilizations before Euro-American settlement (U.S. Department of Agriculture, Forest Service 1996a). The native American relationship with the environment is cast as an implicit ideal. Greens quote from the journals of Lewis and Clark about the splendor of the pre-industrial environment in the Pacific Northwest, but strike from Woody Guthrie's "Roll on Columbia" the verse about the empire Thomas Jefferson saw when he sent them there.

GrowthFAD is not only a set of values. It is also a theory of regional economic well-being based on a theory of regional environmental quality and economic structure. In the following section, we explore formally some of the implications of such a theory with a simple model.

A Theory of Regional Economic Well-being Consistent with GrowthFAD

Assume an economy with market output, Q, made up of two goods Q_e and Q_{ne}, which represent the extractive and non-extractive industries, respectively:

$$Q = Q_e + Q_{ne} \quad (1)$$

The production functions for market goods are as follows:

$Q_e = F(L_1, N)$ (2)

$Q_{ne} = S(L_2)$ (3)

One type of labor, L_1, produces extractive goods, but is ill suited for non-extractive goods production. Think of L_1 as part of the local labor force which evolved with the extractive industries of the West. It is not very mobile, and the quantity of workers supplied exceeds the quantity demanded at the prevailing wage. We want to abstract from wage issues here, so let's assume we have downward wage rigidity.

In contrast with its extractive counterpart, L_2 is characterized by its mobility. It can move into or out of the region with ease.

In addition, L_2 has a sensitivity to environmental quality. Indeed, in this model, the amount of L_2 in the region depends only on the level of environmental amenities,[4] A:

$L_2 = L(A)$ (4)

with $L'(A) > 0$

Everyone works in this model, so the population of the region, P, is the sum of the two components of its labor force:

$P = L_1 + L_2$ (5)

The market production component of the model also contains an extractive resource, N, used in the production of extractive goods. N is directly related to the production of extractive output, and inversely related to environmental amenities.

While regional capital accumulation and its movement among regions is an important and interesting topic, it is of secondary importance here. Let's assume fixed proportions production, which yields fixed capital-labor ratios. In the non-extractive sector, assume labor is a limiting input, and that capital is supplied with infinite elasticity at the market interest rate. "Lone Eagles" bringing capital with them is a good example of this type of production/migration assumption.

A non-market production function also exists in the model, the

"production" of environmental amenities from less extraction:

A = A (N) (6)

where A' (N) <0

Economic well-being is derived from the flows of both market goods and services produced in the region, and the flow of environmental services. Let environmental services be defined as

E = E (A) (7)

where E' (A) > 0

Representing well-being in per capita terms, we have:

$$W = \frac{(Q + E)}{P} \quad (8)$$

Suppose we wish this model to tell us something about the optimal level of resource extraction. If we maximize well-being with respect to resource extraction we obtain the following:

$$\frac{\partial W}{\partial N} = \frac{P\left[\frac{\partial Q_e}{\partial N} + \left(\frac{\partial Q_s}{\partial L_2}\right) L'A' + E'A'\right] - (Q+E)P'L'A'}{P^2} = 0 \qquad (9)$$

First, note that P' = 1, by definition. Second, note that for (9) to be true the numerator must equal zero. After rearranging terms we have:

$$\frac{\partial Q_e}{\partial N} = -\left(\frac{\partial Q_s}{\partial Lsub2}\right) L'A' - E'A' - \frac{(Q+E)}{P} L'A' \qquad (10)$$

The left-hand-side of (10) is the marginal benefit of extraction. The first two terms on the right-hand-side of (10) are components of the marginal cost of extraction, from less non-extractive output and fewer environmental amenities. The third term is a reduction (increase) in the loss (gain) from extraction due to the out-migration (in-migration) of non-extractive labor. This interesting result shows that environmental decline is a form of regional population control.

The components of (10), while abstract, are not mere curiosities of defunct academic scribblers of environmental economics. Knowledge of

the magnitude of these components are necessary to evaluate the abundant tradeoffs existing in the real world. For if the left-hand-side of (10) is greater than (less than) the right, we need more (less) extraction. Where are we in the West at present? Empirical regional environmental economics knows little about this. Those making grand statements about the effects of extraction and amenities on the welfare in the West are doing so as an act of faith, not an act of science. A theory of regional economic well-being capturing the essence of GrowthFAD cannot support, unambiguously, the policy recommendations its adherents espouse.

GrowthFAD and Empirical Observation

GrowthFAD lays blame for Western environmental decline at the minemouth, the clearcut, the ranch gate and dam. A'(N) in (6) above is strongly negative. Indeed, in the Introduction to his most recent book, Power (1996) notes the demise of the grizzly bear, wild salmon, the wolf and the spotted owl, as well as degradation of public land and water resources from grazing, and "yawning open pits and ravaged landscapes" from mining. The Forest Service's initial reports on ecosystem management note the profound alteration of the landscape of the interior Columbia Basin due to Euro-American settlement.

GrowthFAD adherents see a causal relationship between non-extractive output growth in the West and the level of amenities, especially environmental amenities. They point to studies such as Rudzitis and Johansen (1989), Rudzitis (1993), Beyers et al. (1994), and Salant et al. (1997), as evidence of this pull factor on migration. Rasker writes:

"These amenities are economic assets in very much the same way timber and minerals resources are. They serve an important function, to retain existing people and business, and to attract potential entrepreneurs." (1994, p. 380)

GowthFAD adherents are somewhat unclear empirically about the cause of recent amenity-led in-migration. It could be in spite of the clearcuts, dams and mines, or it could be because of the demise of extractive industries.

Without consideration of the fuzziness of empirical results, believers in GrowthFAD see exceptional economic performance in the West during a time of *relative* decline of extractive industries as evidence that further restriction of extraction will improve regional economic well-being.

Accepting GrowthFAD is, in fact, an act of faith.

GrowthFAD and Faith

Faith is not easy to measure, but it can be studied. It is best explored in social science, as in religion, through examination of testimonials and through observation of the actions of believers.

In 1995 Tom Power and thirty-three fellow signatories produced an excellent articulation of GrowthFAD. At and pursuant to the "Council of Portland" they drafted a "consensus report" in order to speak with a "common voice" about environmental protection and economic development in the Pacific Northwest. As with all new faiths, the founders needed converts. Their doctrinal statement, what I call the "Missoula Manifesto," circulated widely. Mine came to me as a member of the American Economics Association. I was asked to read it, and if I agreed, to sign on. I was also encouraged to distribute the manifesto to others.

In some sense it is difficult not to sign on. GrowthFAD values are much like mine, and I would, without a doubt, have my well-being increased if GrowthFad's explicit and implicit policy agenda were carried out. But as a regional economist, the author is not sure their agenda is best for economic well-being in the region. It would be good, for example, to have a pretty good idea about benefits and costs before disabling dams in the Columbia Basin to improve chances of salmon recovery. And if the Northern Spotted Owl suddenly began nesting in the North Bowl at Schweitzer Mountain, we would look for mitigation rather than establishment of critical habitat.

A Comparison of Traditional Doctrine and GrowthFAD

Finally, Table 1 summarizes the differences in two competing doctrines of Western regional well-being. The comparison follows the taxonomy of doctrinal components discussed above, values, theory, observation and faith, as well as an additional category, policy action. Such comparisons are useful, as they highlight why it is often so difficult for those with different views to have productive discussions. When doctrines clash, human history is not pretty.

In contrast with the Green values of GrowthFAD, traditional doctrine is very mainstream utilitarian. The natural environment is a source of service flows to humans, the value of which should be maximized. No

particular service flow has intrinsic value in and of itself.

Theoretical distinctions in the doctrine are clear. The traditional model emphasizes the extractive economic base as the engine of regional economic growth. When basic industries grow, people move to the region to take the jobs. In GrowthFAD, regional growth stems from a demise of extractive activity, which increases environmental amenities, which attracts labor, which attracts businesses and the jobs they provide.

Not surprisingly, adherents to different doctrine see the world differently. GrowthFAD adherents see a region growing in spite of (maybe because of) extractive decline. Traditionalists see extractive industry doing fine, and contributing to regional well-being.

Given their values, theory, and real-world observation, adherents to both doctrines make leaps of faith. Because GrowthFAD adherents believe regional growth is caused by extractive decline, they advocate curtailing extraction, or, at minimum, not mourning its natural demise. Traditionalists believe that extractive industry is a critical element in regional economic growth. They promote extractive activity.

Concluding Comment

Sorting out the validity of values, theory, and empirical fact is a task for a lifetime, not of one paper. Evaluating faith is better accomplished over millennia. The paper demonstrated that understanding different views about the relationship between economic activity and the environment is more than understanding values alone, theory alone, facts alone, or even faith alone. We must examine the entire package, environmental-economic doctrine.

And finally, please do not construe the arguments above as an attempt to discredit either GrowthFAD or its adherents. GrowthFAD is good doctrine. The faithful are good people. But as one who thinks that "Doubting Thomas" should be the sermon topic in every Christian pulpit, as a "recovering Lutheran" who has taken professional vows in American academe, the author must remain a skeptic on GrowthFAD.

Notes

[1] Miller (1996) refers to this vision as the immaculate consumption scenario.

[2] Good statements of GrowthFAD can be found in Power (1996), Rasker (1994, 1995), and U.S. Department of Agriculture, Forest Service (1996a, 1996b). An informative exchange appears in a recent newsletter of the Political Economy Research Center. See Power (1997), Polzin (1997), and Fawson (1997).

[3] This definition of Green reflects ideas from the German Green Party. None-the-less, the definition is consistent with ideas of Green pioneers such as Schumacher (1973) and Daly (1977), and with more recent statements, such as Ekins (1992).

[4] Invoking shadows of elitism and class conflict, a cynic might suggest that the L_2 have a native distaste for the L_1. The view is accommodated in the following modification of (4):

$L_2 = L (L1,A)$

Where $L' (L_1) < 0$.

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Table 1

Competing Doctrines on Western Economic Growth

Issues	Traditional Doctrine	GrowthFAD
Values	Mainstream utilitarian	Green
Growth Theory	Extractive export base	Labor-constrained
production function		regional
People follow jobs	People follow	

amenities, jobs follow people	environmental	
Extraction increases amenities	Extraction decreases amenities	
Empirical Observation	Extractive industry still doing fine	Region growing in spite of extractive decline
Faith of regional growth	Extraction critical element	Regional growth caused by extractive decline
Policy action	Promote extraction	Curtail extraction

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