

Appendix 4: Producer Decision Rules

Because participation is voluntary, producers respond to the offer of green payments by deciding whether and how to participate. We assume that producers participate only when the overall payment exceeds WTA¹ plus a minimum return that accounts for transaction costs. We assume transaction costs of \$200 per farm in our analysis and test the sensitivity of results to changes in this threshold. When more than one participation option meets participation decision criteria, farms are assumed to select the one that yields the largest net return (payment less WTA).

For scenarios that use the environmental index including *Improved Performance*, *Good Performance*, and *Modified Compliance*, program offers and decision rules are illustrated graphically. In response to any performance-based incentive, producers will first choose the treatment that yields the largest number of environmental points (most performance) per dollar of WTA. In figure A4.1, that treatment is illustrated by point A. Next, the producer would consider treatment for the physical effect with the next-best combination of points and WTA (point B in figure A4.1), and so on. The points form a curve that can be thought of as the producers “supply” of conservation treatments.

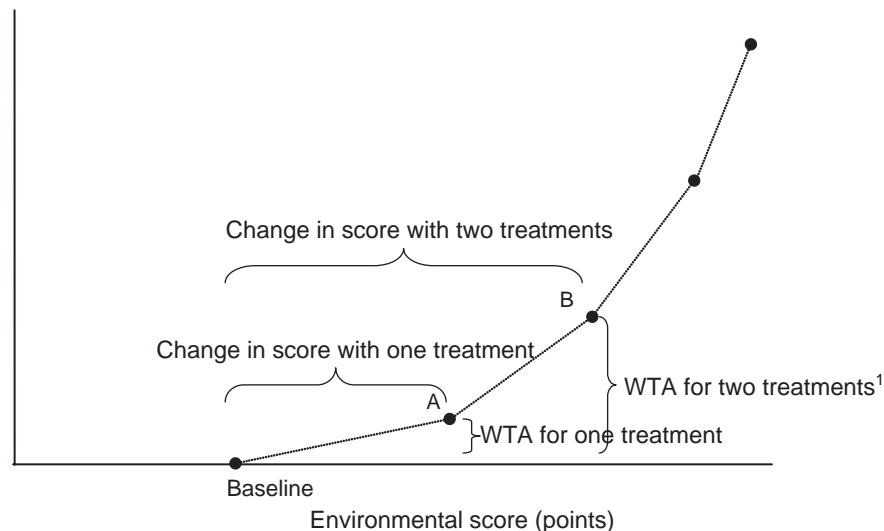
This supply curve, combined with information on payments, determines which conservation treatments a producer will undertake. In the *Improved Performance* scenario, producers are paid on a per-point basis, starting at the producer’s own baseline (pre-program environmental performance). In figure A4.2, the slope of the payment line represents the payment rate (dollars per environmental point). The distance between the payment line and the hori-

¹In the text WTA is often referred to as economic cost.

Figure A4.1

Farm-level “supply” of conservation treatments

Dollars

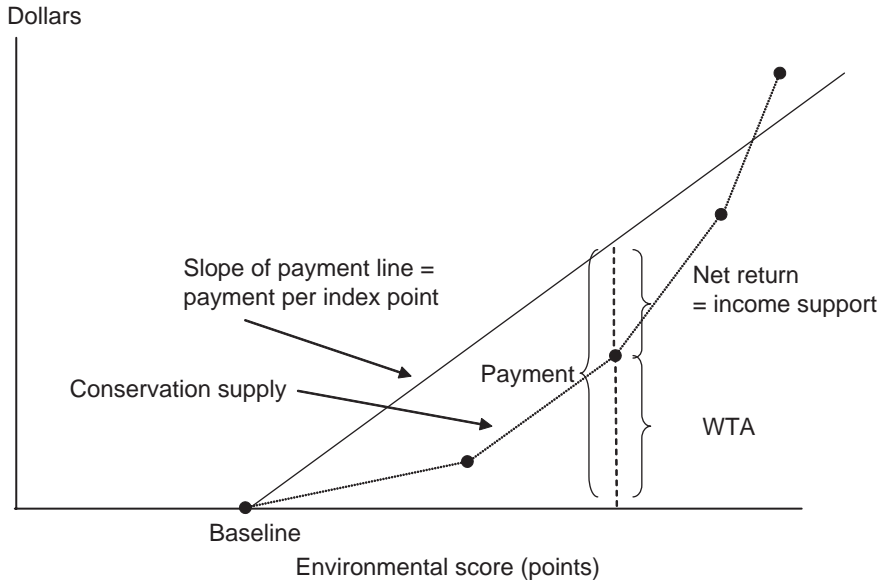


¹WTA is defined as a producer’s willingness to accept—the minimum payment he or she would accept in exchange for taking a specific action (e.g., undertaking a given conservation treatment).

Source: USDA, Economic Research Service.

Figure A4.2

Decision rule for the *Improved Performance* scenario



Source: USDA, Economic Research Service.

zontal axis represents the payment amount and the distance between the points on the supply curve and the payment line represents the producer’s net gain or income support, that is, the amount paid over and above the WTA for adopting environmentally sound practices. Given our assumption about producer behavior, they will choose the option with the largest net return.

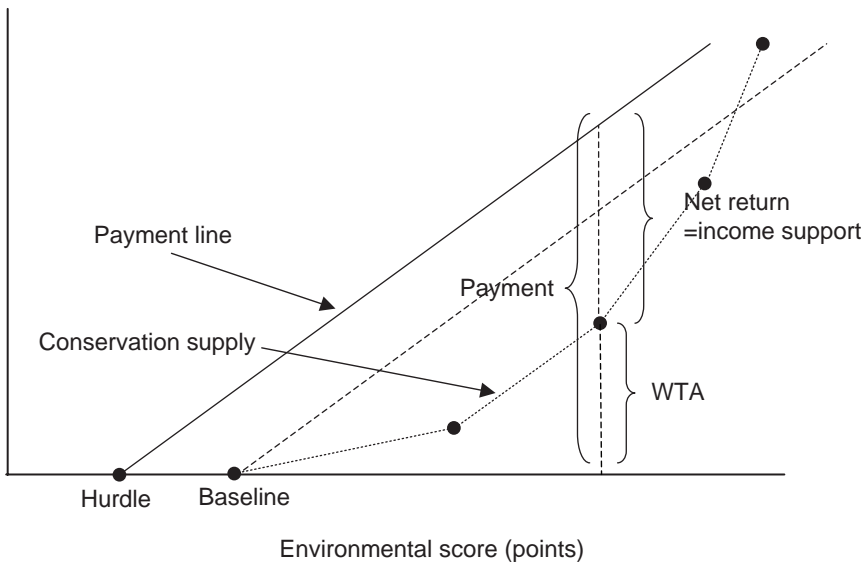
In the *Good Performance* scenario, producers receive payments based on their performance relative an environmental hurdle rather than a farm-specific baseline (fig. A4.3). If a given farm’s baseline is above the hurdle (that is, the baseline is to the right of the hurdle as measured on the horizontal axis in figure A4.3), the producer receives a payment larger than could be earned under the *Improved Performance* scenario. Note that other producers, who have baselines below the hurdle rate (the baseline is to the left of the hurdle rate on the horizontal axis in figure A4.3), would be eligible for payments that are less than they would receive from the *Improved Performance* scenario. These producers may still participate, although their net return (income support) will be less than it would have been under *Improved Performance*. Thus, income support in *Good Performance* is focused on those producers who have already achieved a high level of environmental performance.

Finally, the *Modified Compliance* decision rule can also be depicted graphically as well (fig. A4.4). The maximum payment is similar to the existing direct payments. Producers can receive 20 percent of their maximum payment even if they take no action to address additional environmental concerns. Producers receive 100 percent of their maximum payment if they address all remaining concerns. If the producer addresses only a portion of remaining concerns, the payment is pro-rated according to the proportion of remaining concerns that are addressed (as measured by the environmental index).

Figure A4.3

Decision rule for *Good Performance* scenario when producer baseline exceeds hurdle rate

Dollars

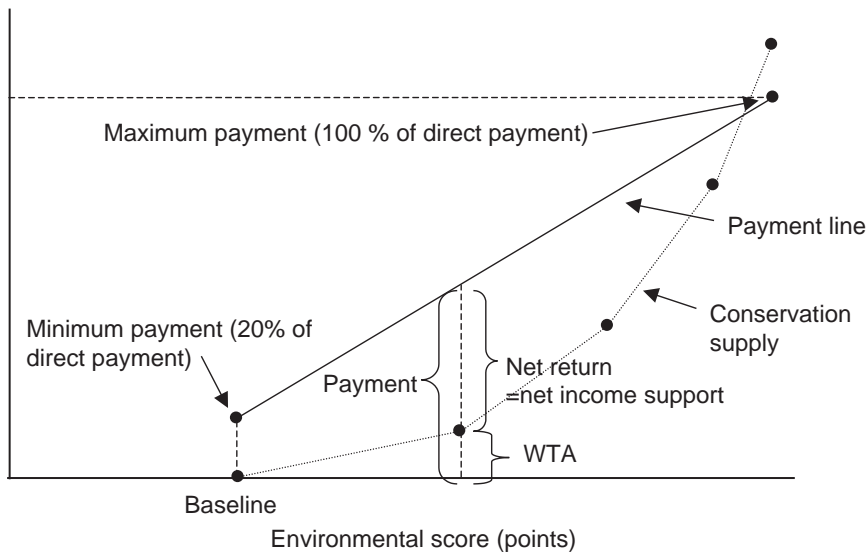


Source: USDA, Economic Research Service.

Figure A4.4

Decision rule for *Modified Compliance* scenario

Dollars



Source: USDA, Economic Research Service.