Chapter 10

THE HEDONIC METHOD

Laura O. Taylor
Georgia State University

1. INTRODUCTION

Heterogeneous or differentiated goods are products whose characteristics vary in such a way that there are distinct product varieties even though the commodity is sold in one market (e.g., cars, computers, houses). The variation in product variety gives rise to variations in product prices within each market. The hedonic method for non-market valuation relies on market transactions for these differentiated goods to determine the value of key underlying characteristics. For instance, by observing the price differential between two product varieties that vary only by one characteristic (e.g., two identical cars, but with one having more horsepower than the other), we indirectly observe the monetary trade-offs individuals are willing to make with respect to the changes in this characteristic. As such, the hedonic method is an “indirect” valuation method in which we do not observe the value consumers have for the characteristic directly, but infer it from observable market transactions.

The most common application of hedonic theory to environmental valuation involves housing markets. Analyzing the choices consumers make over housing is particularly well suited to many valuation exercises. The choices of housing location, and therefore neighborhood amenities, are observable. Often location choice is directly linked to an environmental amenity of interest. For example, housing locations can offer different scenic vistas (Patterson and Boyle, forthcoming). As such, the choice of a house and its associated price, implies...
an implicit choice over the environmental amenities linked to the house and their implicit prices.

Imagine the following hypothetical scenario in which there are two identical lakes, each with 100 identical homes surrounding them. All homes are lake-front, and all the characteristics of the homes themselves, the land, and the neighborhoods are identical across the properties. At the current equilibrium price of $200,000 per house, all 200 homes on either lake are equally preferred. Now, let's imagine that water clarity at one lake, Lake A for example, is improved. We assume that the improved water clarity is preferred by all households. Now if any home on Lake A were offered at the original equilibrium price of $200,000, consumers would uniformly prefer this house to any house on Lake B. In other words, at the current prices, there would be excess demand for the houses located on Lake A, and as such, the price of these houses must rise to bring the market into equilibrium. The price differential that results from the change in water clarity at Lake A is the implicit price consumers are willing to pay for that incremental increase in water clarity. This willingness to pay for water clarity is indirectly revealed to us through the market prices of the homes. For instance, if in the new equilibrium, houses on Lake A sell for $210,000, while houses at Lake B sell for $200,000, the "implicit price" associated with the increased water clarity is $10,000.

Of course, housing markets aren't so simple: housing choice depends on many characteristics such as structure of the house, amenities of the land, neighborhood and location. Yet, the fundamental intuition behind the hedonic method extends easily. By observing the choices consumers make over heterogenous commodities with varying prices, we can estimate the implicit price of one of the component characteristics of the commodity. These implicit prices or hedonic prices, under certain conditions, are equal to WTP or allow us to recover WTP.

Hedonic analyses have been reported as early as Fred Waugh's (1928) analysis of quality factors influencing asparagus pricing, and have been applied to markets as varied as automobiles, computers, VCRs, and appliances, and agricultural commodities.1 Beach and Carlson (1993) estimated the factors affecting herbicide choice by farmers. Nimon and Beghin (1999) applied hedonic pricing to the apparel market to determine if consumers place a premium on clothes made from organically grown cotton.

Hedonic price functions have also been used to determine factors influencing the pricing of prescription drugs (Danzon and Chao 2000;