The Give and Take on Restaurant Tipping

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Dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

in

Economics

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September 17, 2003
Blacksburg, Virginia

Keywords: Tipping, Social Norms, Wage Gap, Attractiveness, Beauty

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(ABSTRACT)

This dissertation examines aspects of both the consumer (the "give") and server (the "take") sides of restaurant tipping. On the consumer side, I address both why, and how much, people tip in restaurants. I also examine a policy issue related to the recent Supreme Court decision in *United States v. Fior d'Italia*. These issues are addressed via a combination of theoretical, empirical, and experimental analysis.

On the server side, I use survey data collected from several restaurants to address the issue of labor market discrimination based on beauty. Specifically, do more attractive servers earn higher tips than less attractive servers? I argue that a tipping data set offers several advantages over data sets used in previous studies of the beauty wage gap.

This dissertation was funded by a National Science Foundation Dissertation Enhancement Grant (NSF # 427347).

Acknowledgements

I want to first thank my advisors, Catherine Eckel and Mark Stegeman, for their guidance throughout the entire dissertation process. Catherine introduced me to the field of experimental economics and was always available to listen to my numerous, and sometimes naive, ideas. She also gave me the initial "push" that I needed to write my first paper. Although it may not be apparent from reading my dissertation, Mark helped me to become more competent in economic theory. He was also always available to discuss my ideas, even at two o'clock in the morning sometimes, never shutting his mind to anything I threw his way.

I thank the members of my committee, Hans Haller, Anya McGuirk, and Aris Spanos, for their remarks and suggestions.

I also want to thank Barbara Barker, Sherry Williams, and Mike Cutlip, for their administrative support.

Finally, to all of the numerous friends that I have made at Virginia Tech throughout the years, thank you for making my stay in Blacksburg an enjoyable one.

This dissertation is dedicated to my parents, John and Sarah Parrett, for their love and guidance each step of the way.

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Chapter 1 – Introduction

Restaurant tipping is a significant part of the U.S. economy. In 1999 and 2000, respectively, sales at full service restaurants were approximately $121 billion and $134 billion (U.S. Census Bureau, 2001). If one assumes a tipping norm of 15%, then America's waiters and waitresses earned roughly $18 billion and $20 billion in tip income, respectively, in 1999 and 2000. These figures represent .196% and .204% of GDP, respectively, for 1999 and 2000 (Council of Economic Advisors, 2002).

Restaurant tipping is also a puzzling phenomenon. Why do people *voluntarily* give money to their server *after* the service has been rendered? Standard neoclassical economic theory can offer no explanation, as such theory predicts that people will not tip.

The origin of tipping is equally puzzling. There is some evidence, for example, that tipping began in the late Middle Ages, with the master or lord of the manor giving his servant or laborer a few extra coins, from either compassion or appreciation of a good deed (Segrave, 1998). Instead, tipping might have originated in an 18th century London coffeehouse on Fleet Street, as a form of bribery, where on the table was a bowl with the inscription "To Insure Promptitude" (Segrave, 1998). Yet another explanation of the origin of tipping says that, between the late 15th and early 17th centuries, visitors to private homes were expected to give sums of money (vails) at the end of a visit, the purpose of which was to remunerate the host's servants for service rendered above and beyond their usual duties (Segrave, 1998).

It is believed that tipping came to America from the traveling aristocracy, before spreading downward class by class (Segrave, 1998). Once in America, tipping survived a series of revolts. From 1905 to 1919, a large group of traveling salesmen organized the Anti-Tipping Society of America and was able to get tipping abolished in several states (Dewald, 2001a). However, these anti-tipping laws were later deemed unconstitutional (Dewald, 2001a).

This dissertation examines aspects of both the consumer (the "give") and server (the "take") sides of restaurant tipping. On the consumer side, I address both why, and how much, people tip in restaurants. I also examine a policy issue related to the recent Supreme Court decision in *United States v. Fior d'Italia*. These issues are addressed via a combination of theoretical, empirical, and experimental analysis.

On the server side, I use survey data collected from several restaurants to address the issue of labor market discrimination based on beauty. Specifically, do more attractive servers earn higher tips than less attractive servers? I argue that a tipping data set offers several advantages over data sets used in previous studies of the beauty wage gap. The consumer side of tipping is tackled in Chapter 2, while I examine the server side of tipping in Chapter 3.

Chapter 2 – An Empirical Analysis of the Determinants of Tipping Behavior

1. Introduction

In this chapter, I make use of both experimental and survey data in order to explore several determinants of tipping behavior. First, I examine, at least partially, why people tip in restaurants. In order to do this, I turn to the social norms literature. I consider two possible theories: reciprocity and let-down aversion.

I also examine various aspects of the tipping situation. What types of factors influence how much people tip in restaurants? I consider two. First, how does tip size vary with table size and, second, do males tip more than females?

Finally, I analyze a policy issue related to tipping. Specifically, I examine the June 17, 2002 decision by the United States Supreme Court in *U.S. v. Fior d'Italia*, which states that the Internal Revenue Service can use credit card tips to estimate a server's unreported tips, and then bill the server's restaurant for FICA taxes on these unreported tips.

2. Motivating the Issues

2.1 A Simple Model of Restaurant Tipping

In order to motivate the above issues, consider the following simple model of restaurant tipping. Consumer i's utility from dining at a table size of n, at which all n persons pay their own check, is:

$$U_i = \phi - \beta_i p(1 + T_i) + \gamma_i(T_i - \psi_i(s,t_i^o))\omega_i(n) + \gamma_i(\tau - \psi_i(s,t_i^o)) \qquad (1)$$

where:

$\phi > 0$ is the consumer's utility from food
$\beta_i > 0$ is the consumer's marginal utility of income
$p > 0$ is the price of the meal (quantity is fixed at 1)
$T_i > 0$ is the consumer's percentage tip
$\gamma_i > 0$ describes consumer i's utility from tipping
$\gamma_i' > 0, \gamma_i'' < 0$
$s > 0$ is the service quality that consumer i receives from his server
$t_i^o > 0$ is consumer i's belief regarding the tip norm in a restaurant
$\psi_i > 0$ is consumer i's service-adjusted tip norm function
$\partial\psi_i/\partial(s) > 0$ and $\partial\psi_i/\partial(t_i^o) > 0$
ψ_i is separable in s and t_i^o

$\omega_i(n)$ describes consumer i's concern for status

$\omega_i' > 0$

$\tau = [(n-1)/n]\Delta + (1/n)T_i$ is the average tip size of the table

Δ = average tip of table not including consumer i

When consumer i enters a restaurant, he has some belief regarding the tip norm – i.e. what percentage tip he should leave his server. This belief then gets adjusted, either upward or downward, depending on the type of service consumer i receives. For example, consumer i might be a 20% tipper, but if he receives horrible service, then he adjust this figure downward to, say, 15%. Consumer i's utility from tipping depends on how far his tip is from this service-adjusted tip norm.

While consumer i dislikes the fact that he must part with some of his income when he tips, he does like to exude status with his tip, especially at large table sizes. Consumer i also cares about how the table tips, the same way he cares about how he tips.

Utility maximization for consumer i with respect to T_i yields the following first order condition:

$$\Omega = \partial U_i/\partial T_i = -\beta_i p + \gamma_i'(T_i - \psi_i(s, t_i^o))\omega_i(n) + \gamma_i'(\tau - \psi_i(s, t_i^o))[1/n] = 0 \quad (2)$$

The second order condition is given by:

$$\partial\Omega/\partial T_i = \partial^2 U_i/\partial T_i^2 = \gamma_i''(T_i - \psi_i(s, t_i^o))[\omega_i(n)] + \gamma_i''(\tau - \psi_i(s, t_i^o))[1/n]^2 \quad (3)$$

Imposing symmetry, so that $T_i = \Delta$ in equilibrium, the second order condition reduces to:

$$\Gamma = \partial\Omega/\partial T_i = \partial^2 U_i/\partial T_i^2 = \gamma_i''(T_i - \psi_i(s, t_i^o))[\omega_i(n) + 1/n^2] \quad (4)$$

While it is necessary that $\gamma_i'' \leq 0$ for U to be concave, I assume that $\gamma_i'' < 0$, so that U is strictly concave. Thus, $\Gamma < 0$.

By imposing symmetry in equilibrium ($T_i = \Delta$), and using the Implicit Function Theorem, I obtain the following comparative statics of interest:

$$\partial T_i/\partial \beta_i = (\partial\Omega/\partial\beta_i)/-(\partial\Omega/\partial T_i) = \frac{(-p)}{-\Gamma} \Rightarrow \mathbf{\partial T_i/\partial \beta_i < 0}$$

$$\partial T_i/\partial s = (\partial\Omega/\partial s)/-(\partial\Omega/\partial T_i) = \frac{\{\gamma_i''(T_i - \psi_i(s, t_i^o))[-\partial\psi_i/\partial s][\omega_i(n)] + \gamma_i''(\tau - \psi_i(s, t_i^o))[-\partial\psi_i/\partial s][1/n]\}}{-\Gamma}$$

$$= \frac{\{-\gamma_i''(T_i - \psi_i(s, t_i^o))[\partial\psi_i/\partial s][\omega_i(n) + 1/n]\}}{-\Gamma} \Rightarrow \mathbf{\partial T_i/\partial s > 0}$$

$$\partial T_i/\partial t_i^o = (\partial\Omega/\partial t_i^o)/-(\partial\Omega/\partial T_i)$$

$$= \frac{\{\gamma_i''(T_i - \psi_i(s, t_i^o))[-\partial\psi_i/\partial t_i^o][\omega_i(n)] + \gamma_i''(\tau - \psi_i(s, t_i^o))[-\partial\psi_i/\partial t_i^o][1/n]\}}{-\Gamma}$$

$$= \frac{\{-\gamma_i''(T_i - \psi_i(s, t_i^o))[\partial\psi_i/\partial t_i^o][\omega_i(n) + 1/n]\}}{-\Gamma} \Rightarrow \mathbf{\partial T_i/\partial t_i^o > 0}$$

$$\partial T_i/\partial n = (\partial\Omega/\partial n)/-(\partial\Omega/\partial T_i)$$

$$= \frac{\{\gamma_i'(T_i - \psi_i(s, t_i^o))[\omega_i'(n)] + \gamma_i'(\tau - \psi_i(s, t_i^o))[1/n][n^{-2}][\Delta - T_i] - \gamma_i(\tau - \psi_i(s, t_i^o))[n^{-2}]\}}{-\Gamma}$$

$$= \frac{\{\gamma_i'(T_i - \psi_i(s, t_i^o))[\omega_i'(n) - 1/n^2]\}}{-\Gamma} \Rightarrow \mathbf{\partial T_i/\partial n \; ? \; 0}$$

This cannot be signed because, as table size increases, consumer i has an incentive to both increase his tip, because of status considerations, and to decrease his tip, because of "free riding" considerations. The latter is due to the fact that $\partial^2\tau/\partial T_i\partial n < 0$, which says that, as table size increases, the impact of consumer i's tip on the table's tip diminishes. Because of this, consumer i has an incentive to "free ride" on the tips of the other consumers at the table.

2.2 Why Do People Tip in Restaurants?

I consider two possible theories, taken from the social norms literature, of why people tip in restaurants: reciprocity and let-down aversion. Each will be considered in turn.

2.2.1 Reciprocity

The model in Section 2.1 predicts $\partial T_i/\partial s > 0$. This says that consumer i rewards better service with a higher tip, and worse service with a lower tip. This is consistent with the theory of reciprocity. Reciprocity refers to the idea that people reward kind actions, and punish unkind actions. According to Fehr and Gachter (2000), there is considerable evidence that suggests a strong role for reciprocity in motivating human behavior.[1]

Hypothesis #1 – The relationship between tip size and service is positive

The relationship between tip size and service quality has been oft-addressed in the tipping literature. Ben-Zion and Karni (1976) examine the issue within a theoretical framework by

[1] Reciprocity bears some semblance to gift exchange (see Akerlof (1982)), which is defined as an informally enforced agreement to give goods, services, information, or money in exchange for future compensation in-kind. However, according to Kranton (1996), such exchange takes place between people who know each other well, so that each person has an incentive to be reliable and honest, because they could lose the benefits of future exchange if not. Reciprocity is more general, in that it does not require this.

modeling the supply and demand for server effort, assuming repetitive purchase of service by customers. They find that if the server is to provide more than the minimal amount of effort, then the marginal reward for effort must be positive, and that a necessary condition for the existence of a "tip" payment arrangement is a positive response of effort to the size of the tip. They also examine restaurateur behavior, finding that if the control of service is costly, then a tipping arrangement is likely optimal, in that it is least expensive. This closely resembles the idea that the institution of tipping serves as a buyer monitoring device, whereby it exists because the customer, rather than the manager, has the comparative advantage in monitoring the server (Jacob and Page, 1980).

May (1980) uses data from 184 tables at a large midwestern restaurant to examine the effect of service quality on percent tip. She asks several waitresses to record, on their guests' checks, the tip amount and, as well, asks several outside observers to rate the service quality at each table. May finds that those factors associated with the servers' speed and efficiency of service do not affect percent tip. It should be noted that May is very vague regarding both how she conducts her study and how she analyzes her data.

Lynn and Latane (1984) perform two studies that examine several determinants of tip size. In their first study, Lynn and Latane interview 169 groups of diners at an IHOP restaurant about their dining experience. The authors ask respondents to rate, among other things, service quality, on a ten-point scale. Regressing percent tip on service quality, as well as several control variables, Lynn and Latane fail to find a significant relationship between percent tip and service quality. In their second study, the authors ask four waiters and five waitresses at a restaurant to record information about their customers for an entire week. Service quality is measured by requiring each server to rate, on a five-point scale, the effort that they expended serving each of their tables. Using data from 206 dining groups, and regressing percent tip on service quality, as well as several control variables, Lynn and Latane fail to find a significant relationship between percent tip and service quality.

Adelman (1985), using results based on a Gallup phone survey of approximately 1000 adults, finds that the amount of money restaurant customers claim to leave as a tip depends on their satisfaction with the service that they receive. For instance, eighty-five percent of those surveyed agreed with the statement that "The amount I leave as a tip depends on my satisfaction with the service that I get."

Lynn and Grassman (1990), using 106 interviews conducted at a Red Lobster, examine why people tip in restaurants. They ask respondents to rate service quality on a five-point scale based on server promptness, friendliness, and attentiveness. The responses are then averaged to form a service quality index. Regressing absolute tip on this index, as well as several control variables, Lynn and Grassman find a significant, positive relationship between tip size and service quality. They explain this result via equity theory, which says that people buy equitable relationships with their tips. A relationship is equitable when the output-input (service-tip) ratio for the server equals the output-input (tip-service) ratio for the tipper. Thus, higher service on the part of the former requires a higher tip on the part of the latter to restore equity.

McCarty et al. (1990) interview thirteen restaurant servers about tipping. These servers indicate that their performance, among other factors, affects the size of the tip that they receive.

Bodvarsson and Gibson (1992) say that for the buyer monitoring explanation to have any validity, tip size must be positively related to service quality. Using survey data based on customer exit interviews conducted at a Red Lobster restaurant, Bodvarsson and Gibson (1992) examine the tipping decisions of 104 tables. Customers rated several components of service (promptness, friendliness, and attentiveness) on a five-point scale and their responses were then averaged to form a service quality index. Using regression analysis, and holding other factors, such as bill size, constant, Bodvarsson and Gibson find a significant, positive relationship between absolute tip and service quality.

Bodvarsson and Gibson (1994) use a more heterogeneous survey data set, consisting of seven Minnesota restaurants in both St. Cloud and St. Paul. They ask 700 customers to rate service, among other things, on a scale from 0 to 5. Using regression analysis, and holding other factors, such as bill size, constant, the authors fail to find a significant relationship between absolute tip and service quality. Bodvarsson and Gibson attribute this to the fact that most of the survey respondents in their sample rated service quality as excellent, so that there is little variance in service quality to explain the variance in tip size.

Harris (1995) queries 107 waiters and 137 customers about tipping. According to Harris, both customers and waiters point to service quality as a characteristic of servers who receive large or small tips.

Lynn and Graves (1996) say that for the buyer monitoring story to be true, tip size must be positively related to service quality. The authors also point to equity theory, saying that it, too,

predicts a positive relationship between tip size and service quality. Equity theory says that a relationship is equitable when each of the participant's outcomes from the relationship are proportionate to their inputs into the relationship. Lynn and Graves perform two studies in order to get at the effect of service quality on tip size. In the first study, they use survey data collected from 161 customers at two Houston restaurants. Lynn and Graves form an "index of satisfaction with service" by taking the average of each of the customers' five-point scale ratings of their server on appearance, knowledge of menu, friendliness, speed of service, and attentiveness. Using regression analysis, and holding other factors, such as bill size, constant, they find a significant, positive relationship between absolute tip and service quality. In their second study, Lynn and Graves ask a waitress at a Red Lobster in Columbia, Missouri to collect data from each of her tables over the course of several weeknights. They measure service quality by asking the waitress to declare whether or not she thought that her customers voiced praise for some aspect of the dining experience, for each of the 173 observations. A dummy variable called "customer praise" is created based on the waitress' declarations. Using regression analysis, and holding other factors, such as bill size, constant, the authors find a significant, positive relationship between absolute tip and service quality.

Bodvarsson and Gibson (1997), using survey data collected from 697 patrons at seven Minnesota restaurants, examine several determinants of percent tip. Respondents are asked to rate service quality, among other things, on a scale from 0 to 5. Bodvarsson and Gibson find that the percent tip associated with service quality equal to 5 is higher than the percent tip associated with service quality equal to 4.

Speer (1997) examines data from a Market Facts, Inc. telephone survey, in which 1000 adults are asked several tipping-related questions. More than one-half of the 1000 respondents say that they tip food servers based on service.

Mok and Hansen (1999), using data from 107 questionnaires distributed to customers at a Houston restaurant, examine several determinants of tip size. They ask respondents to rate service quality on a five-point scale, based on their server's appearance, knowledge, friendliness, speed of service, and attentiveness. A service quality index is then formed by averaging over these ratings for each respondent. Mok and Hansen find a significant, positive correlation between the service quality index and absolute tip.

Rogelberg et al. (1999) use a procedure known as policy capturing to study various determinants of tip size. The authors provide 115 subjects with a booklet containing 80 restaurant situations, each of which, in turn, contains several of the following cues: type of restaurant, cleanliness, atmosphere, server friendliness, server gender, service quality, food quality, and bill size. For each of the 115 subjects, absolute tip size is regressed on the cues. The authors find that 44% of the subjects' tipping models contain a significant service quality cue.

Bodvarsson and Gibson (1999) ask a sample of 126 undergraduates from St. Cloud State University in Minnesota, and 160 undergraduates from the University of Lethbridge in Alberta, Canada, to role-play in a tipping scenario. The undergraduates are presented with two scenarios, each containing three service possibilities ("satisfactory", "very good", "poor"). One scenario supposes that they are dining with a friend, and receive a bill totaling $20, while the other supposes that they are dining alone, and receive a $10 bill. The undergraduates are then asked what percent tip they would leave in each situation. Bodvarsson and Gibson analyze each pool of undergraduates separately, and find a significant, positive relationship between percent tip and service quality.

Ineson and Martin (1999) conduct street interviews of people who had both eaten in a restaurant within ten days of the time of the interview, and had been responsible for paying the bill. Based on 207 interviews in the United Kingdom, they find that respondents who receive better service are more likely to leave a tip.

Lynn and Simons (2000) collect charge bill and tip data from fifty-one servers, over a six-week period. Furthermore, the authors ask each of the servers to rate their serving abilities, on a five-point scale, based on each of the following criteria: attentiveness, friendliness, speed, and knowledge. A service quality index is then formed by averaging over these criteria for each server. Regressing absolute tip on this service quality index, as well as several control variables, Lynn and Simons find a significant, positive relationship between service quality and tip size.

Conlin et al. (2000) use survey data from 1,998 respondents spanning 36 Houston-area restaurants to examine several determinants of tip size. They ask respondents to rate their server on a five-point scale, based on their server's friendliness, speed of service, appearance, and attentiveness. Conlin et al. then average over these scores to form a service quality index.

Regressing percent tip on this index, as well as several control variables, the authors find a positive, significant relationship between service quality and percent tip.

Callan and Tyson (2000) survey 120 customers in both England and Italy about their tipping behavior. The authors find that, in both countries, service quality is the most important determinant of the size of the tip to leave the server.

Lynn and McCall (2000a) perform a meta-analysis of thirteen studies of the tip-service relationship. Using a combined total of 2,547 observations, Lynn and McCall find a significant, positive relationship between tip size and service quality. However, they note that this relationship is tenuous. The authors also looked to see if the tip-service relationship varies according to the type of service evaluation used. Lynn and McCall find that tipping is only related to customers' ratings of service quality, not servers' or third parties' ratings.

Dewald (2001b) examines the restaurant tipping behavior of several nationalities (Australian, Canadian, Mandarin Chinese, Malaysian, Singaporean, Taiwanese, American) in Hong Kong via the use of interviews. Dewald asks 983 respondents how much they tipped in addition to the usual 10% Hong Kong service charge for a HK$300 (US$40) meal. Respondents were then asked to rate the overall service quality in Hong Kong, based on their experiences in the country, on a seven-point scale. Finally, Dewald asks respondents what amount of gratuity they would have left for a similarly priced restaurant meal back in their home country. Dewald finds that visitors who rate service as being very good in Hong Kong (a "7") tip significantly higher than those who select other categories of perceived service quality, where tip represents what respondents left in addition to the 10% service charge. As well, while service was mentioned by Americans, Australians, Canadians, Malaysians, and Singaporeans as the main reason for increasing their tips [above and beyond the 10% service charge] in Hong Kong, relative to [their usual tip] at home, only one-half of Taiwanese and 45% of Mainland Chinese chose service as the reason why they tipped more in Hong Kong.

Finally, Casey (2001) examines views on restaurant tipping in New Zealand by interviewing 64 restaurant employees and managers. Respondents say that the main reason people tip is because they appreciate the service.

My work adds to this literature in several ways. First, I explain the tip-service relationship using the concept of reciprocity, and using a mathematical model. Previous studies mention only the buyer monitoring story and the theory of equity, and fail to provide a rigorous model of their

arguments. Second, much like Bodvarsson and Gibson (1999), I consider the use of experiments in examining the tip-service relationship. However, unlike Bodvarsson and Gibson, I create an environment that both resembles a tipping situation, and that provides subjects with incentives. What people say they will do in a given situation is often different from what they actually do (Freedman, 1969). The latter also helps to cast doubt on Adelman (1985), McCarty et al. (1990), Harris (1995), Speer (1997), Rogelberg et al. (1999), Ineson and Martin (1999), Callan and Tyson (2000), Dewald (2001b), and Casey (2001). Third, in my survey analysis, I rely on the customers' evaluation of service, not the servers', like in Lynn and Latane (1984), Lynn and Graves (1996), and Lynn and Simons (2000), or outside observers', like in May (1980). Fourth, unlike Bodvarsson and Gibson (1997), I hold several, possible confounding factors constant in my analysis of the relationship between tip size and service quality. Finally, all of the studies that measure service quality measure it on an ordinal scale and use this in their analyses. However, this is inappropriate. According to Spanos (1999), the mean, variance, and covariance, all of which are the building blocks of regression analysis, have no obvious interpretation for ordinal variables. In my work, I create a dummy variable for service.

2.2.2 Let-Down Aversion

The model in Section 2.1 predicts $\partial T_i/\partial t_i^o > 0$. This says that consumer i tips more, the higher he thinks the tipping norm is, and he tips less, the lower he thinks the tipping norm is. This is consistent with the theory of let-down aversion, which says that decision-makers do not like to let others down. According to Charness and Dufwenberg (2002), let-down aversion theory predicts a positive relationship between consumer i's tip and what consumer i thinks the server thinks consumer i is going to tip. A good proxy for the latter is consumer i's belief about the tip norm.

Hypothesis #2 – The relationship between consumer i's tip and his belief about the tip norm is positive.

My work is the first to empirically examine this issue.

2.3 Factors Influencing How Much People Tip

I also examine various aspects of the tipping situation. What types of factors influence how much people tip in restaurants? I consider two. First, does tip size increase, or decrease, with table size, and second, do men tip more than women? Each will be considered in turn.

2.3.1 The Effect of Table Size on Tip Size

The model in Section 2.1 predicts an ambiguous effect of table size on tip size. This is because there are two opposing forces at work here – status and free riding. If the former effect is stronger than the latter, then tip size will increase with table size. If, on the other hand, the latter effect is stronger, then tip size will fall with table size. My result might help explain why many restaurants add an automatic service charge onto bills at table sizes of six or higher.

Hypothesis 3 – If the status effect outweighs the free riding effect, tip size will increase with table size. If the free riding effect outweighs the status effect, tip size will decrease with table size

Freeman et al. (1975) are the first to address this issue in the tipping literature. They ask eleven servers to collect data from their customers at a Steak and Ale restaurant in Columbus, Ohio. Using data from 396 groups of diners, Freeman et al. find a significant, negative relationship between percent tip and group size. They explain this finding using a concept known as diffusion of responsibility, which says that the responsibility for helping is psychologically divided among those in a position to help.

Elman (1976) and Snyder (1976) offer alternative explanations of the results of Freeman et al. (1975). Elman (1976) argues that a person leaving a tip might take into account the relative time and effort per dollar of food required to serve a table. Thus, the person might make a slight adjustment around the tip norm in order to account for this. Snyder (1976) conjectures that, since two customers can be served with little more effort than one person, with a reduction in the server's inputs per person, customers and service people alike may perceive that it is reasonable for the tip percentage to be less at the larger table.

May (1980) gathers data from 600 tables at a large midwestern restaurant to examine the effect of group size on percent tip. She finds that percent tip is a convex function of group size, with a minimum at group size of five. It should be noted, however, that May is very vague regarding both how she conducts her study and how she analyzes her data.

Lynn and Latane (1984) perform two studies that examine several determinants of tip size. In their first study, Lynn and Latane interview 169 groups of diners at an IHOP restaurant about their dining experience. Regressing percent tip on group size, as well as several control variables, Lynn and Latane find a significant, negative relationship between percent tip and group size. In their second study, the authors ask four waiters and five waitresses at a restaurant

to record information about their customers for an entire week. Using data from 206 dining groups, and regressing percent tip on group size, as well as several control variables, Lynn and Latane fail to find a significant relationship between percent tip and group size.

McCarty et al. (1990) interview thirteen restaurant servers about tipping. The servers indicate that group size, among other factors, affects the size of the tip that they receive.

Lynn and Grassman (1990), using 106 interviews conducted at a Red Lobster, examine why people tip in restaurants. Regressing absolute tip on group size, as well as several control variables, they fail to find a significant relationship between tip size and group size.

Lynn and Graves (1996) perform two studies that examine several determinants of restaurant tipping. In the first study, they use survey data collected from 161 customers at two Houston restaurants. Using regression analysis, and holding other factors, such as bill size, constant, they find a significant, positive relationship between absolute tip and group size for one of the two restaurants examined. In their second study, Lynn and Graves ask a waitress at a Red Lobster in Columbia, Missouri to collect data from 173 tables over the course of several weeknights. Using regression analysis, and holding other factors, such as bill size, constant, the authors fail to find a significant relationship between absolute tip and group size.

Bodvarsson and Gibson (1997), using survey data collected from 697 patrons, at seven Minnesota restaurants, examine several determinants of percent tip. Comparing percent tip across tables of lone and multiple diners, they find that lone diners tip more.

Boyes et al. (1998) say that there are two opposing forces at work at a table size of n. One is social approval, which suggests that customers in groups should tip more than those alone, and the other is free riding. They use a survey data set collected from eighteen restaurants in Phoenix, Arizona, via exit interviews of customers, to examine which force is stronger. Boyes et al. classify their 160 observations evenly into one of four restaurant categories before estimating a random effects model of percent tip on both party size and several control variables. They find a significant, positive relationship between party size and percent tip, thus supporting their social approval hypothesis. However, because Boyes et al. (1998) use bad judgement in selecting an econometric model, their results should be considered suspect. Panel data methods are supposed to be used when you have i cross section units over time t. They simply have i cross section units, and should pool their data, including a dummy for j-1 of their j restaurant groupings.

Bodvarsson and Gibson (1999) ask a sample of 126 undergraduates from St. Cloud State University in Minnesota, and 160 undergraduates from the University of Lethbridge in Alberta, Canada, to role-play in a tipping scenario. The undergraduates are presented with two scenarios, each containing three service possibilities ("satisfactory", "very good", and "poor"). One scenario supposes that they are dining with a friend, and receive a bill totaling $20, while the other supposes that they are dining alone, and receive a $10 bill. Bodvarsson and Gibson ask the undergraduates what percent tip they would leave in each situation. The authors analyze each pool of undergraduates separately, finding in both that a diner will tip proportionately less when dining with someone else than when dining alone.

Ineson and Martin (1999) conduct street interviews of people who had both eaten in a restaurant within ten days of the time of the interview, and had been responsible for paying the bill. Based on 207 interviews in the United Kingdom, they find that groups of less than five persons are more likely to leave a tip.

Rind and Strohmetz (1999, 2001a) each have to do with the effect of a particular type of server behavior on percent tip, while Rind and Strohmetz (2001b) examines the effect of weather on percent tip. These papers also examine the effect of group size on percent tip. Based on sample sizes of 81, 60, and 60, respectively, each of the papers fails to find a significant correlation between percent tip and group size.

Finally, Conlin et al. (2000) use survey data from 1,998 respondents, spanning 36 Houston-area restaurants, to examine several determinants of tip size. Regressing percent tip on group size, as well as several control variables, the authors find a positive, significant relationship between group size and percent tip.

My work adds to this literature in several ways. First, Freeman et al. (1975), Bodvarsson and Gibson (1997), and Rind and Strohmetz (1999, 2001a, 2001b) all fail to control for other factors that might influence tip size, besides group size. I control for a plethora of additional factors in my work. Second, similar to Bodvarsson and Gibson (1999), I consider the use of experiments in examining the effect of table size on tip size. However, unlike Bodvarsson and Gibson, I create an environment that both resembles a tipping situation, and that provides subjects with incentives. What people say they will do in a given situation is often different from what they actually do (Freedman, 1969). The latter also helps cast doubt on both McCarty et al. (1990) and Ineson and Martin (1999).

2.3.2 The Effect of Table Composition on Tip Size

Do men tip more than women? Eckel and Grossman (1998) point out that, on one hand, women are more generous than men in dictator-type settings.[2] Such settings closely resemble restaurant tipping. On the other hand, as men earn roughly 35% more than women (Council of Economic Advisors, 2002), men have a lower marginal utility of income than women. And, the model in Section 2.1 predicts $\partial T_i/\partial \beta_i < 0$, which implies that men will tip higher than women.

Hypothesis 4 – If the generosity effect of women outweighs the income effect of men, women will tip higher than men. If, on the other hand, the income effect of men outweighs the generosity effect of women, men will tip higher than women.

A few attempts have been made in the tipping literature at addressing this issue. Cunningham (1979) asks six waitresses to record tipping data from 130 dining parties, and finds that females leave a higher percentage tip than males. It should be noted, however, that nothing was held constant in Cunningham's analysis.

Lynn and Latane (1984) perform two studies that examine several determinants of tip size. In their first study, Lynn and Latane interview 169 groups of diners at an IHOP restaurant about their dining experience. Regressing percent tip on customer sex, as well as several control variables, Lynn and Latane find that males tip more than females. In their second study, the authors ask four waiters and five waitresses at a restaurant to record information about their customers for an entire week. Using data from 206 dining groups, and regressing percent tip on customer sex, as well as several control variables, Lynn and Latane again find that males tip more than females.

Finally, Lynn and McCall (2000b) perform a meta-analysis of 25 tipping studies. Holding other factors constant, they find that average bill-adjusted tips left by men are larger than those left by women.

My work adds to this literature in two ways. First, unlike Cunningham (1979), I hold constant several control variables. Second, I consider the use of experiments in examining sex differences in tipping.

[2] The standard dictator game has to do with the division of a fixed pie among two people by only one person. Assume a pie size of x and two players, A and B. Suppose A is the dictator and B is the recipient. A determines an allocation of x between himself and B. Once the allocation is decided upon by A, the game is over and both players receive the allocation that A determined. Player B makes no decisions in such a game and is essentially at the mercy of player A.

2.4 An Analysis of the Supreme Court's Decision in *United States v. Fior d'Italia*

In 1995, the IRS billed Fior d'Italia for taxes on tips they say employees failed to report in 1991 and 1992. The IRS arrived at this figure by looking at Fior d'Italia's credit card receipts, which revealed that the restaurant's servers, on average, were receiving tip rates of 14.49% and 14.29%, respectively, in the two years. Applying these percentages to Fior d'Italia's total sales in 1991 and 1992, respectively, the IRS arrived at an amount that they say the restaurant's employees should have claimed in tips in those years. By subtracting from this the amount that Fior d'Italia's servers actually claimed in tips in those years, and then applying the appropriate FICA tax rates to this difference, the IRS issued Fior d'Italia a tax bill of $23,262.

In its ruling, the Supreme Court stated that the IRS' method does not fall "outside the bounds of what is reasonable" (National Restaurant Association, 2002). However, a major assumption of the IRS' methodology is that customers paying cash tip the same as those paying with a credit card, which may not be true. If cash-paying customers tip more than credit card-paying customers, then the IRS' method understates the amount actually owed. If the opposite is true, then the IRS is overstating this amount. Thus, I am interested in whether or not customers paying their bill with a credit card tip differently than those paying with cash. This evidence might be of interest to the restaurant industry, as the National Restaurant Association is vigorously trying to get the Supreme Court's ruling overturned.

Theoretically, it appears that those paying their bills with a credit card will tip more than those paying with cash. If persons paying by credit card have higher incomes, and thus a lower marginal utility of income, than those paying with cash, then the model in Section 2.1, which predicts $\partial T_i/\partial \beta_i < 0$, implies that the former will tip higher than the latter. There is also evidence that people spend more when using credit cards (Feinberg, 1986).

Hypothesis #5 – Those paying by credit card tip more than those paying with cash. This is evidence that the United States Supreme Court's ruling in *United States v. Fior d'Italia* is based on an illegitimate premise.

There have been a few papers in the tipping literature that have addressed this issue. May (1980) uses data from 600 tables at a large midwestern restaurant to examine the effect of payment method on percent tip. Holding group size constant, she finds mean percent tip is higher for credit card than for cash tips. It should be noted, however, that May is very vague regarding both how she conducts her study and how she analyzes her data.

Lynn and Latane (1984) perform two studies that examine several determinants of tip size. In their second study, the authors ask four waiters and five waitresses at a restaurant to record information about their customers for a week. Using data from 206 dining groups, and regressing percent tip on payment method, as well as several control variables, Lynn and Latane find that those paying with credit card leave a higher percent tip than those paying with cash.

Finally, Lynn and McCall (2000b) perform a meta-analysis of 25 tipping studies. Holding other factors constant, they find that customers leave larger absolute tips when paying with credit card, than with cash.

My work adds to this literature in several ways. First, it seeks to replicate the above studies. Second, my work is more up-to-date than the above studies. Even though Lynn and McCall published their study in the year 2000, it is a meta-analysis of several studies, many of which are older. Finally, my work motivates the study of the effect of payment method on tip size differently than any of the above studies. My work, unlike the above studies, examines an actual policy issue.

3. Study 1 – A Tipping Experiment

3.1 Introduction

In this section, I employ a tipping experiment in order to examine the reciprocity explanation of why people tip, the effect of table size on tip size, and whether males tip more than females. The experimental design used here is based on Ruffle (1998), as his design closely resembles a tipping situation.[3]

3.2 Experimental Design

Subjects in the experiment are first categorized as either Person A (Dictator) or Person B (Recipient), before participating in several dictator games with endogenously-determined pie sizes. For all treatments, Recipients first complete a skills test (a word-search game). Their scores are then ranked according to their performance, with their ranking determining the pie size. As each session only consists of two Recipients, there are only two possible rankings, high

[3] My design is somewhat different from Ruffle (1998) in that my subjects do not first participate in a standard dictator game. In my experiment, "tip" is construed to be the percentage of the pie offered to the Recipient. There are two reasons why I do not completely replicate Ruffle (1998). First, having the subjects participate in a standard dictator game, in addition to an endogenous dictator game, is difficult to coordinate, since doing so would require me to have them participate in each of the games on different dates. Furthermore, replication of Ruffle (1998) makes for a more expensive experiment, which at the time was a concern.

and low. The high-ranking Recipient earns a $28 pie to be split with his Dictator, while the low-ranking Recipient earns a $14 pie. The Recipient's earning of the pie size is analogous to service, while the Dictator's subsequent offer is analogous to a tip.

As illustrated in Table 1, this within-subjects design consists of seven treatments, varying three factors – service, table size, and information. Service in the experiment refers to the fact that Recipients can earn one of two pie sizes. A Recipient earning the $28 pie provides higher "service" to his Dictator than a Recipient earning the $14 pie. Table size is varied by having

Table 1 – Treatments

Table Size	Private	Public
1	Yes	----
2	Yes	Yes
3	Yes	Yes
6	Yes	Yes

Dictators make their offers in the presence of different numbers of other Dictators. Finally, Dictators make their offers both publicly, so that everyone else sees them, and privately, so that no one else sees them, across each table size. Public tipping provides subjects with the opportunity to display status if they so desire, which is important in order to adequately examine the effect of table size on tip size (refer to Section 2.3.1).

Each session consists of twelve Dictators and two Recipients who participate in all of the seven treatments in Table 1. In each treatment, each Dictator is randomly paired with one of the two anonymous Recipients to make an allocation decision. As there are only two Recipients and twelve Dictators, each Recipient is always paired with more than one Dictator in each treatment. More specifically, each Recipient is always paired with six Dictators in each treatment. Furthermore, Dictators sitting at the same table are always paired with the same Recipient, and the Recipients' service level is not necessarily constant across all treatments. The fact that each Recipient receives payments from six Dictators in each treatment might at first seem like a problem, in that it could affect Dictators' decisions – i.e. each Recipient gets to split a pie with six Dictators, whereas each Dictator only gets to split a pie with one Recipient. However, this setup is realistic in that, in the real world, a given server usually has several tables, not just one.

In order to make more transparent the mechanics of the experiment, consider the following example. A Dictator making his allocation decision at a private table size of three means that he is sitting at a table with two other Dictators. They each are assigned the same Recipient who, based on his performance on the skills test, has earned either the $28 or $14 pie size to split with each of them. Each Dictator independently makes his allocation decision on a decision sheet, before folding it in half. In the public table size of three treatment, everything works exactly the same, except that in this treatment, there is but a single decision sheet in the center of the table. On it, each Dictator writes down his allocation amount, at his own pace.

A total of 112 subjects, all Virginia Tech students, participated in the experiment in November 2002. Eight sessions, each lasting roughly one hour and forty-five minutes, were conducted at Virginia Tech's Laboratory for the Study of Human Thought and Action, using the same two experimenters, in the same role, each time. Treatment order was randomized over each of the eight sessions. There do appear to be some order effects, which I control for in my econometric analysis of the data.

Subjects were randomly assigned to either the Recipient or Dictator role upon showing up and participated only once, and in a single role. At the end of the experiment, subjects completed a post-experiment questionnaire, which collected various demographic data, before being paid, privately, a $5 show-up fee, as well as additional earnings based on their decisions in one of the treatments. The treatment for which they were paid was determined randomly at the end of the experiment. Dictators earned, on average, $23.23, while the average earnings of Recipients were $21.55. Copies of the instructions, decision sheets, and post-experiment questionnaire used in the experiment are available in Appendix A.

3.3 Data

The experiment originally produced 672 data points. However, I had to drop all of the observations from one of the sessions, as an overwhelming majority of the Dictators in that session offered zero to their Recipients across all seven treatments, making this session significantly different from all others. This behavior may have been the result of a statement made at the beginning of the experiment by one of the dictators. This particular dictator said, aloud, something to the effect of "Why would you ever give any money at all to them?" I also dropped two outlying observations in which the Dictator offered 100% of the pie to the Recipient, because their inclusion yielded markedly different results. It is

possible that these two Dictators meant to offer nothing to their Recipients but, in a moment of confusion, instead offered the whole pie. After dropping these observations, I was left with 586 observations. A description of the variables used in my analysis, along with summary statistics, is presented in Table 2.

Table 2 – Description of Variables and Summary Statistics (N = 586)

Variable	Description	x-bar	s
tip	% of pie offered to Recipient	15.70	16.97
$ tip	dollar amount of pie offered to Recipient	3.34	3.83
tip_{-1}	lag of tip	----	----
tsiz	table size	3.28	1.83
public	dummy equal to 1 if tip made public, 0 otherwise	.43	.50
service	dummy equal to 1 if Recipient earned $28 pie, 0 otherwise	.50	.50
male	dummy equal to 1 if Dictator male, 0 otherwise	.55	.50
opsex	dummy equal to 1 if Dictator's table consists of at least 1 member of opposite sex, 0 otherwise	.62	.48
age	Dictator's age	19.90	2.64
border	Dictator' birth order	1.81	.99
race	dummy equal to 1 if Dictator white, 0 otherwise	.74	.44
rel	dummy equal to 1 if Dictator regularly attends religious services, 0 otherwise	.33	.47
econ	dummy equal to 1 if Dictator has taken at least 1 economics course, 0 otherwise	.98	.15
brosis	number of Dictator's brothers and sisters	1.53	1.06
famserv	dummy equal to 1 if any family or friends of the Dictator have ever been a restaurant server, 0 otherwise	.73	.45
dicserv	dummy equal to 1 if Dictator has ever been a restaurant server, 0 otherwise	.21	.41
M2	session dummy equal to 1 for Monday at 2 p.m. session, 0 otherwise	----	----
M5	session dummy equal to 1 for Monday at 5 p.m. session, 0 otherwise	----	----
Tu2	session dummy equal to 1 for Tuesday at 2 p.m. session, 0 otherwise	----	----
Tu5	session dummy equal to 1 for Tuesday at 5 p.m. session, 0 otherwise	----	----
W2	session dummy equal to 1 for Wednesday at 2 p.m. session, 0 otherwise	----	----
Th2	session dummy equal to 1 for Thursday at 2 p.m. session, 0 otherwise	----	----
Th5	session dummy equal to 1 for Thursday at 5 p.m. session, 0 otherwise	----	----

3.4 Econometric Specification

The percentage of the pie offered by the Dictator to the Recipient was used as the dependent variable in my analysis. Before analyzing the data, however, two econometric issues had to first be addressed. First, as a large portion of the Dictators offered \$0 to their Recipients, the data are left-censored at zero. Second, my data set is essentially a panel that follows Dictators' allocation decisions across seven treatments.[4] To address these issues, I analyzed the data using a Tobit random effects model. Before proceeding any further, I want to first discuss the choice between a fixed and random effects model.

The choice between a random and fixed effects model is not a trivial one. Consider the following simple panel data model of i cross section units (i.e. subjects in my experiment) over time t (i.e. experimental treatment):

$$y_{it} = b_o + b_1 x_{it} + a_i + u_{it},\ v_{it} = a_i + u_{it}$$

Here, a_i represents the unobserved factors affecting y_{it}, and is assumed to be fixed over time t. v_{it} is a composite error term, containing both a traditional error term, u_{it}, and the unobserved factors a_i. In estimating such a model, one's first instinct might be to pool the data and use OLS. However, it is possible that $Cov(a_i,x_{it}) \neq 0$, in which case a pooled OLS procedure is not valid, since $Cov(a_i,x_{it}) \neq 0$ violates an OLS assumption that there can be no correlation between the error term and the explanatory variable(s).[5]

When $Cov(a_i,x_{it}) \neq 0$, the appropriate model choice is a fixed effects model. The purpose of a fixed effects model is to eliminate the a_i's. The fixed effects model achieves this by essentially using a first difference transformation of the data over time.[6] What if, instead, $Cov(a_i,x_{it}) = 0$?

In this case, the appropriate model choice is a random effects model. The goal of the fixed effects model is to eliminate the a_i's, since it is believed that they are correlated with the

[4] The panel is slightly unbalanced. It contains a total of 84 subjects (Dictators) and consists of 7 observations per subject. However, again, I dropped two outliers in which the Dictator allocated 100% of the pie to the Recipient. Thus, for two of the Dictators, there are only 6 observations.

[5] The intuition behind this is straightforward. Consider a simple model of the form $y = a_o + a_1 x + e$, and assume $Cov(x,e) \neq 0$. Suppose you run this regression and a_1 turns out to be positive and statistically significant. However, since the error term, which represents unobserved/uncontrolled factors affecting y, is correlated with the explanatory variable, it might be that the positive and significant a_1 is due to these unobserved/uncontrolled factors, and not to x. A good real world example of this type of problem is when y is wage and x is a race dummy and you are trying to examine whether or not there exists discrimination in the labor market.

[6] This is the reason why researchers prefer panel data over other types of data. Researchers, like the one in footnote 5 studying wage gaps, are usually in a situation in which they need a fixed effects model, so that they can control for these unobserved factors affecting both the explanatory and dependent variable. This, in turn, is so that they can

explanatory variable(s). However, eliminating the a_i's when they are not correlated with the explanatory variable(s) will yield inefficient coefficient estimates. Using, instead, a pooled OLS procedure is no better, since such a procedure ignores the fact that the v_{it}'s might be serially correlated across time.[7] In order to correct for this serial correlation, a random effects model uses a special GLS transformation. Thus, a random effects model is essentially pooled OLS that uses a special GLS transformation.

In practice, the choice between fixed and random effects comes down to a test of whether or not $Cov(a_i,x_{it}) = 0$. A Hausman test is used to test this hypothesis. As well, Baltagi (1995) provides rules of thumb for choosing between a random and fixed effects model. He says that a random effects model is the appropriate choice if the data represent a draw of N cross section units randomly from a large population. Alternatively, a fixed effects model is the appropriate choice if the data are thought to exhaust the population – i.e. if the analysis is focused on a specific set of N cross section units, and the inference is restricted to the behavior of these N cross section units.

With my data, I had to immediately rule out a fixed effects model, since I am interested in certain variables that are constant over time, like the variable male. Such time-constant variables get swept-away in a fixed effects transformation. However, as it is still possible that $Cov(a_i,x_{it}) \neq 0$ with my data, Wooldridge (2002) says that I should try to control for as many cross section groupings as possible, via the use of dummy variables. Doing this will hopefully control for the part of a_i correlated with the explanatory variables, so that I am essentially left with a situation in which $Cov(a_i,x_{it}) = 0$. This is likely in my case, as I incorporate a large number of demographic control variables.

3.5 Results

I examine, first, the issue of whether or not the theory of reciprocity helps to explain why people tip in restaurants. If reciprocity is a good explanation of why people tip in restaurants, then the relationship between tip size and service should be positive. This implies that a higher value of service should result in a higher percent tip from the Dictator. Looking at Table 3, it can be seen that Recipients who earned the $14 pie size received a 15.01% tip, while those

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examine the effect of the explanatory variable on the dependent variable in a clean, non-confounding manner. The cross section counterpart to a fixed effects model is IV.

earning the $28 pie size received a tip of 16.38%, thus lending some credence to the reciprocity story.[8] However, the multivariate analysis in Table 4 suggests that the relationship between percent tip and service is weak at best (p = .149, one-tailed).[9]

Table 3 – Mean Percent Tip by Treatment

Variable	N	Mean Percent Tip (tip)
Male (male = 1)	321	18.73
Female (male = 0)	265	12.02
$28 Pie (service = 1)	293	16.38
$14 Pie (service = 0)	293	15.01
1-Person Table (tsiz = 1)	84	17.04
2-Person Table (tsiz = 2)	168	17.13
3-Person Table (tsiz = 3)	168	15.90
6-Person Table (tsiz = 6)	166	13.36

Next, I examine whether or not tip size varies with table size. Table 3 lends some credence to a negative relationship, with average percent tip being roughly the same for one and two-person tables, but 15.90% and 13.36%, respectively, for three and six-person tables. The multivariate analysis in Table 4 confirms this (p = .083, two-tailed). A one-person increase in table size results in a percent tip that is .6 percentage points lower.

Finally, I look at sex differences in tipping. According to Table 3, males Dictators tipped an average of 18.73%, while female Dictators tipped an average of only 12.02%. The multivariate analysis in Table 4 confirms this difference (p = .007, two-tailed).

To summarize, the findings from the tipping experiment are as follows. First, the theory of reciprocity helps to explain, albeit weakly, why people tip. Second, the relationship between tip size and table size is negative. Finally, males are better tippers than females.

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[7] This serial correlation across time is due to the fact that the a_i's will still be present. Thus, there will be an a_i for each t. For example, the unobserved factors affecting firm 1 in 1980 also affect firm 1 in 1981, etc. This is because they are assumed to be constant over time.

[8] Performing means tests is a superfluous exercise here, as I rely on my econometric model to draw conclusions about the data.

[9] A one-tailed test was performed due to the very strong a priori belief that this relationship should be positive. Both the theoretical model in Section 2 and intuition guide this belief.

Table 4 – Results From Tobit Random Effects Model (N = 502)

Variable	Coefficient[10]	Standard Error	P-value (two-tailed)
tip	dependent variable	----	----
tip_{-1}	.15	.077	.002***
tsiz	-.60	.555	.083*
public	1.88	1.66	.072*
service	1.11	1.69	.297
male	4.83	2.85	.007***
opsex	-.56	2.08	.671
age	1.15	.564	.001***
border	1.09	1.90	.363
race	-5.19	3.65	.024**
rel	-.93	3.19	.645
econ	-2.62	8.92	.641
brosis	-2.04	1.80	.072*
famserv	-.13	3.32	.952
dicserv	-.62	3.62	.787
M2	7.86	5.65	.027**
M5	2.43	5.78	.504
Tu2	.83	5.47	.810
Tu5	7.86	5.58	.026**
W2	5.40	5.47	.117
Th2	3.28	5.59	.352
constant	-16.97	13.81	< .001***
χ^2	76.09	----	< .001***
R^2	.256	----	----
Log-likelihood	-1575.22	----	----
Adjustment Factor[11]	.63	----	----

***Significant at 1%, **Significant at 5%, *Significant at 10%

[10] Note that the coefficients presented here have been adjusted by the Adjustment Factor described in footnote 11.

[11] The coefficient estimates from a Tobit model measure the partial effects of the independent variables on the latent (unobserved) dependent variable y*. However, as I am interested in the partial effects on the observed dependent variable, y, I must compute an adjustment factor, and adjust the original coefficient estimates by this factor. Analytically, $\partial(E[y \mid \mathbf{x}]) / \partial x_j = \beta hat_j * \Phi(\mathbf{x\beta hat}/\sigma hat)$, where Φ denotes the cdf of the standard normal distribution. Furthermore, in computing $\mathbf{x\beta hat}$, mean values of the independent variables are used. Thus, what is being presented in Table 4 is $\partial(E[y \mid \mathbf{x}]) / \partial x_j$, instead of $\partial(E[y^* \mid \mathbf{x}]) / \partial x_j$, which is what Stata presents.

4. Study 2 – Field Data Analysis

4.1 Introduction

In this section, I examine each of the issues discussed in Section 2 using survey data. A copy of the survey is available in Appendix B. The final section of this chapter, Section 5, will compare the results of both Study 1 and Study 2, in order to examine the external validity of my experimental results.[12]

4.2 Procedure

I collected survey data from five Richmond, Virginia area restaurants, summarized in Table 5, in summer 2002.[13] At each restaurant, the data were collected over the course of a weekend, on Friday and Saturday evenings, from 6 p.m. until roughly 10 p.m. Customers were approached as they exited the restaurant, and the same two people, both myself and my assistant, administered the surveys at all five of the restaurants. Table 6 summarizes the number of surveys collected at each restaurant.

Table 5 – Description of Restaurants Surveyed

Restaurant	Appetizers	Salads As Meal	Sandwiches	Entrees	Type of Rest.
Extra Billy's	$3.25-$5.45	$6.25-$7.25	$5.95-$7.25	$6.75-$14.95	BBQ
Memphis BBQ	$2.99-$7.99	$6.99-$8.49	$5.99-$6.49	$8.99-$15.99	BBQ
The Grapevine II	$4.95-$9.95	$6.25-$7.25	NA	$7.95-$16.95	Greek/Italian
Melito's	$2.35-$4.95	$6.75-$7.95	$4.25-$7.35	$8.15-$17.95	Italian/Amer.
Shackleford's	$3.50-$10.90	$8.50-$9.95	$6.95-$11.95	$13.95-$24.95	Amer./Seafood

[12] The issue of external validity is rarely investigated in experimental studies, despite its obvious importance. Notable exceptions are the research agendas of James Andreoni and co-authors and Catherine Eckel and co-authors. For example, Andreoni, Brown, and Rischall (2001) use field data to confirm estimates of elasticities of giving from laboratory experiments in Andreoni and Vesterlund (2001). Eckel, Grossman, and Lutz (2001) examine the relationship between laboratory measures of risk preferences and insurance purchase behavior. Finally, Eckel and Grossman are conducting a field experiment with Minnesota Public Radio to test the external validity of the results reported in Eckel and Grossman (2003).

[13] The reason I collected data from these five restaurants, as opposed to other restaurants, is because these restaurants were the only ones willing to let me survey their customers. Collecting field data is tough – I asked approximately twenty-five restaurants for permission to survey their customers, and only six obliged.

Table 6 – Number of Surveys Collected at Each Restaurant

Restaurant	# Surveys Collected	# Rejections	Response Rate
Extra Billy's	87	23	79.1%
Memphis BBQ	83	29	74.1%
The Grapevine II	81	8	91.0%
Melito's	120	18	87.0%
Shackleford's	99	12	89.2%
Total	**470**	**90**	**84.0%**

The survey data are used to address the issues presented in Section 2 of this chapter. Beginning first with the issue of why people tip, recall that if reciprocity motivates people to tip, then customers should respond positively to service quality. Question 9 on the survey which, again, is found in Appendix B, asks respondents to rate the quality of service they received from their waiter/waitress on a seven-point scale. If let-down aversion is an important motivator, then people should tip in response to their belief regarding the tipping norm. Question 20 on the survey asks respondents what they think the norm is regarding percent tip in a restaurant.

Moving on to the issue of what determines how much people tip, question 14 on the survey asks respondents to report their sex. This enables me to examine sex differences in tipping. Questions 1 and 2 on the survey ask respondents to report both the number of people at their table and, as well, the number of checks their table had. These questions allow me to examine the effect of table size on tip size. The latter question is important because someone tipping at a table of nine, and for the entire table of nine, might tip differently than if he were only tipping for five of the nine persons at the table of nine.

Finally, question 7 asks how respondents paid for their bill. This question will allow me to examine the premise of the Supreme Court's ruling in *U.S. v. Fior d'Italia*.

The second parts of questions 4 and 5 were used as filters. They asked, respectively, whether or not the respondent received help paying both the bill and the tip. I did not want to include in my data set customers who paid for the bill, but were assisted by others in paying either the tip or the bill. In either of these cases, the customer's tip that is recorded on the survey may or may not be an accurate reflection of that customer's tipping behavior. The remaining questions on the survey were used to create control variables.

4.3 Data

I began with a total of 485 observations. However, after cleaning the data, I was left with only 216 observations. The data were cleaned by deleting those observations for which

respondents either did not provide a response, or for which respondents provided an ambiguous response, to the most critical questions on the survey. These questions are 1 - 7, 9 - 18, and 20. A description of the variables used in my analysis, along with summary statistics, is presented in Table 7.

Table 7 – Description of Variables and Summary Statistics (N = 216)

Variable	Description	x-bar	s
$ tip	$ amount of tip	6.26	3.27
% tip	tip as percentage of bill	19.63	10.70
bill	size of bill	34.48	18.69
bill2	size of bill squared	----	----
tablesize	table size	2.72	1.14
tablesize2	table size squared	----	----
age	age of tipper	46.56	12.09
numchecks	number of checks at table	1.21	.60
service[14]	dummy equal to 1 if service high, 0 otherwise	.91	.28
income[15]	dummy equal to 1 if income high, 0 otherwise	.82	.38
tipnorm[16]	tipper's belief regarding the tip norm	5.63	3.29
paymethod	dummy equal to 1 if tipper paid by credit card or atm card, 0 otherwise	.63	.48
male	dummy equal to 1 if tipper male, 0 otherwise	.67	.47
tipperserv	dummy equal to 1 if tipper was ever a server, 0 otherwise	.25	.43
eb	restaurant dummy equal to 1 if restaurant Extra Billy's, 0 otherwise	.16	.36
melito	restaurant dummy equal to 1 if restaurant Melito's, 0 otherwise	.26	.44
memphis	restaurant dummy equal to 1 if restaurant Memphis BBQ, 0 otherwise	.19	.40
grapevine	restaurant dummy equal to 1 if restaurant Grapevine II, 0 otherwise	.16	.37
shackle	restaurant dummy equal to 1 if restaurant Shackleford's, 0 otherwise	.22	.42
serversex	dummy equal to 1 if server male, 0 otherwise	.31	.46
religion	dummy equal to 1 if tipper regularly attends religious services, 0 otherwise	.47	.50
married	dummy equal to 1 if tipper married, 0 otherwise	.76	.43
friday	dummy equal to 1 if survey data collected on Friday, 0 otherwise	.43	.50
regular[17]	dummy equal to 1 if dining frequency high, 0 otherwise	.32	.47

[14] Service was measured on a scale from 1 to 7, and was considered "high" if in the 5-7 range.
[15] Income was measured on a scale from 1 to 5, and was considered "high" if in the 4-5 range.
[16] The variable tipnorm is given in terms of dollars and cents. To calculate tipnorm, I took the tipper's percentage tip norm and applied it to his bill amount. Let %tipnorm denote the tipper's percentage tip norm.
[17] Dining frequency was measured on a scale from 1 to 7, and was considered "high" if in the 5-7 range.

4.4 Econometric Specification

The dollar value of the tip was used as the dependent variable in my analysis, and all variables measured on an ordinal scale, like service, were made into dummy variables. The latter was done because, according to Spanos (1999), the mean, variance, and covariance, all of which are the building blocks of regression analysis, have no obvious interpretation for ordinal variables.

An important issue surrounding the estimation of any model is that of statistical adequacy. Statistical adequacy refers to the notion that the assumptions underlying the model are satisfied, both so that the estimates retain their desirable properties (i.e. unbiasedness or consistency), and so that any inference made using the model is legitimate. According to Spanos (1986), in order to claim a statistically adequate OLS model, a crucial requirement is that the error term be NIID (normally distributed, independent, and identically distributed).[18] This NIID requirement can, and should, be tested, as described below.

I test for normality (N) using both a Shapiro-Wilk and a skewness-kurtosis test. The null hypothesis for both of these residual-based tests is that the error term is normally distributed.

Joint Normality also implies a linear conditional mean and a homoskedastic (constant) variance. To test for linearity, I employ the Ramsey RESET test, which uses an auxiliary regression of the residual on both the explanatory variables, as well as the powers of the fitted values, of the original regression. I then perform a joint F test on the parameters of the powers of the fitted values, under the null hypothesis of a linear conditional mean. To test for heteroskedasticity, I employ the Cook-Weisberg test, which uses an auxiliary regression of the squared residual on powers of the fitted values of the original regression. I then perform a joint F test on the parameters of the powers of the fitted values, under the null hypothesis that the variance is homoskedastic.

The independence (I) requirement says that $Cov(e_t,e_{t-s}) = 0$, where e is the error term, and $s \neq 0$. As the data set used here is a cross section of restaurant customers, dependence should not be an issue. However, Spanos (1999) says that, with cross section data, one should try and order the data in a meaningful fashion, so as to try and capture any possible dependence. As I can think of no meaningful way to order my data so as to capture dependence, I will assume that the error term is independently distributed.

[18] Spanos (1986) terms a statistically adequate OLS model the Normal Linear Regression Model (NLRM).

Finally, the identically distributed (ID) requirement says that both the conditional mean and conditional variance should remain constant over time or, in the case of cross section data, some type of meaningful ordering. Again, as I can think of no meaningful way to order my data, I will assume that the error term is identically distributed.

Using the testing procedures described above, I achieved statistical adequacy by estimating a Feasible Generalized Least Squares (FGLS) model. Such a model is essentially a weighted least squares procedure that corrects for heteroskedasticity. Weights were obtained by taking the log of the squared residual of the original model and then regressing this on the model's independent variables. This yielded a new model. I obtained the fitted values, y-hat, of this new model and then calculated my weight = sqrt($e^{y\text{-}hat}$).

4.5 Results

I offered two explanations of why people tip in Section 2 – reciprocity and let-down aversion. If reciprocity is a good explanation of why people tip in restaurants, then the relationship between tip size and service quality should be positive. Looking at Table 8, it can be seen that respondents who received good service tipped an average of 19.83%, while those receiving bad service tipped an average of only 17.51%.[19,20] The multivariate analysis, presented in Table 9, confirms this finding ($p = .011$, two-tailed).

If let-down aversion motivates people to tip, then the relationship between tip size and respondents' belief about the tip norm should be positive. The results presented in Table 8 lend credence to this hypothesis, with the multivariate results in Table 9 confirming it ($p < .001$, two-tailed).

Section 2 also examined two determinants of how much people tip in restaurants. One of these determinants was table size. Table 8 reveals a nonlinear relationship between tip size and table size that is confirmed by the multivariate analysis in Table 9 ($p = .012$ and $p = .004$, two-tailed). For table sizes roughly < 3, tip size falls with table size, while for table sizes > 3, tip size increases with table size.

Another determinant discussed in Section 2 was sex. According to Table 8, males tipped an average of 20%, compared to females who tipped an average of only 18.87%. However, as the

[19] Even though the dependent variable in my econometric analysis is $ tip, I use % tip in Table 8 in order to hold constant bill size.

[20] Performing means tests is a superfluous exercise here, as I rely on my econometric model to draw conclusions from the data.

multivariate analysis in Table 9 reveals, this difference is not statistically significant (p = .731, two-tailed).

Finally, I examined a policy issue related to tipping. Was the June 17, 2002 decision by the United States Supreme Court in *U.S. v. Fior d'Italia*, which states that the Internal Revenue Service can use credit card tips to estimate a server's unreported tips and then bill the server's restaurant for FICA taxes on these unreported tips based on a legitimate premise? If those paying cash tip lower than those paying by credit card, then the IRS' method will overestimate a restaurant's tax bill on unreported tips. Alternatively, if those paying cash tip higher than those paying by credit card, then the IRS' method will underestimate a restaurant's tax bill on unreported tips. Table 8 reveals that those respondents who paid by either cash or check tipped an average of 20.83%, compared to those who paid either with a credit card or atm card, whom tipped 18.93%. However, the multivariate analysis in Table 9 reveals that this difference is not statistically significant (p = .839, two-tailed).

To summarize, the findings from my field data analysis are as follows. First, the theories of both reciprocity and let-down aversion help to explain why people tip. Second, the relationship between tip size and table size is nonlinear. Third, tip size does not depend on the sex of the tipper. Finally, as tip size does not depend on payment method, it appears that the Supreme Court's ruling in *United States v. Fior d'Italia* was based on a legitimate premise.

5. Conclusion

This chapter examined the determinants of both why and how much people tip in restaurants, as well as a policy issue related to tipping. Beginning first with the issue of why people tip in restaurants, two possibilities were considered – reciprocity and let-down aversion. Both the experimental and field data lent credence to the former. The latter possibility, which could only be examined using the field data, was also found to determine why people tip in restaurants.

Next, I looked at two determinants of how much people tip in restaurants, sex and table size. While the experimental data revealed a negative relationship between tip size and table size, the field data revealed a nonlinear relationship. Sex differences were found only in the experimental data, which showed that men tip higher than women.

Using the field data, I examined the Supreme Court's decision in *United States v. Fior d'Italia*, which allows the IRS to use credit card tips to estimate a server's unreported tips, and

then bill the server's restaurant for FICA taxes on those unreported tips. My analysis lent credence to the Supreme Court's decision in this case, in that those paying their bill with cash or check tipped no differently than those paying with either an atm or credit card.

Finally, comparing my results from both the experimental and field analyses allows me to examine the external validity of my tipping experiment. The tipping experiment initially appears to be externally valid on only one of the issues – the reciprocity explanation of why people tip in restaurants. However, closer examination of the effect of table size on tip size reveals that the experimental data are externally valid on this issue as well. The experimental data, which examined table sizes of 1, 2, 3, and 6, revealed a negative relationship between tip size and table size. The field data revealed a nonlinear relationship, with a minimum tip size at table size of approximately 3. However, as only 6.47% of the field sample dined at a table size of 5 or larger, inference should be restricted only to table sizes of 4 or smaller. Thus, just like the experimental data, the field data reveal a negative relationship between tip size and table size for table sizes of one through three. The experimental and field data are not comparable for table sizes greater than three.

This research represents one of the few attempts by economists to seriously examine restaurant tipping. Several avenues for future research exist. For example, it might be interesting to examine repeat customers in an experimental setting by looking at a repeated version of the tipping game used here. It would also be interesting to study the effect of server behavior on tipping in greater detail, especially within the context of a repeated game. Finally, I would like to eventually turn my attention to other professions in which people are tipped (i.e. hotel workers, barbers, taxi drivers). Do the same norms that apply to restaurant tipping also apply to these professions? How did tipping originate in these professions? While theoretical work will no doubt play a role in these, and other, explorations, empirical analyses will most likely pave the way.

Table 8 – Mean Percent Tip by Treatment

Variable	N	Mean Percent Tip
Good Service (service = 1)	197	19.83
Bad Service (service = 0)	19	17.51
10% Norm (%tipnorm = 10%)	12	16.96
15% Norm (%tipnorm = 15%)	123	18.53
20% Norm (%tipnorm = 20%)	65	22.42
One-Person Table (tablesize = 1)	6	28.87
Two-Person Table (tablesize = 2)	126	20.54
Three-Person Table (tablesize = 3)	30	16.56
Four-Person Table (tablesize = 4)	40	17.61
Five-Person Table (tablesize = 5)	8	19.44
Six-Person Table (tablesize = 6)	4	18.08
Seven-Person Table (tablesize = 7)	1	20.00
Eight-Person Table (tablesize = 8)	1	28.85
Male (male = 1)	145	20.00
Female (male = 0)	71	18.87
Credit Card/ATM (paymethod = 1)	137	18.93
Cash/Check (paymethod = 0)	79	20.83

Table 9 – Results from FGLS Model (N = 216)

Variable	Coefficient	Standard Error	P-value (two-tailed)
ln($ tip)	dependent variable	----	----
constant	.69	.14	<.001***
bill	.03	.004	<.001***
bill2	-.0002	.00003	<.001***
tablesize	-.13	.05	.012**
tablesize2	.02	.01	.004***
age	-.004	.001	<.001***
numchecks	.04	.04	.298
service	.15	.06	.011**
income	.18	.04	<.001***
tipnorm	.04	.01	<.001***
paymethod	.01	.03	.839
male	.01	.03	.731
tipperserv	.01	.03	.676
eb	-.03	.05	.528
melito	.04	.04	.279
memphis	.02	.05	.661
grapevine	.01	.04	.711
serversex	-.04	.03	.158
religion	-.002	.03	.940
married	.01	.03	.704
friday	-.01	.02	.621
regular	.02	.03	.436
R^2	.782[21]	----	----
F-Statistic	1218.00	----	<.001***
Shapiro-Wilk Normality Test	----	----	.272
Skewness-Kurtosis Test for Normality	----	----	.112
RESET Linearity Test	----	----	.394
Cook-Weisberg Heteroskedasticity Test	----	----	.076*

***Significant at 1%, **Significant at 5%,
*Significant at 10%, ^Significant at 15%

[21] The R^2 presented here comes from the original, pre-FGLS model. This is because a traditional R^2 is meaningless in an FGLS model.

Chapter 3 – Beauty and the Labor Market: Evidence from a Tipping Data Set

1. Introduction

Beauty plays a nontrivial role in people's lives. For example, analysts at Goldman Sachs estimate that the $160 billion global beauty industry is growing at approximately 7% per year, which is more than twice the rate of the developed world's GDP (The Economist Newspaper Limited, 2003). As well, the number of cosmetic procedures in America has increased by over 220% since 1997 (The Economist Newspaper Limited, 2003).

All of this is not just a sign of the times. Medieval noblewomen, for instance, swallowed arsenic and applied bats' blood in order to improve their complexions (The Economist Newspaper Limited, 2003). Victorian ladies, in order to attain a wasp-like waist, would have their lower ribs removed (The Economist Newspaper Limited, 2003).

One reason for all of this attention given to beauty might be that it pays off in the labor market. Labor market discrimination can come in a variety of flavors. Examples include, but are not limited to, race, sex, age, and religion. This chapter examines labor market discrimination based on beauty, using a sample of restaurant servers. Specifically, do more attractive servers earn higher tips than less attractive servers?

2. Review of the Literature

According to neoclassical economic theory, discrimination based on beauty will not occur, unless systematic productivity differences exist between the attractive and unattractive. However, a substantial literature provides evidence much to the contrary. It turns out that it does pay to be beautiful.

Dipboye et al. (1975) ask thirty male undergraduates and thirty male professional interviewers to screen twelve resumes that vary according to sex, physical attractiveness, and scholastic record. Attractiveness is determined by outside persons and measured on a binary scale. The subjects are told to sequentially rate the resumes on a nine-point scale before ranking them from one (most satisfactory) to twelve (least satisfactory). The authors find that attractive applicants are preferred to unattractive applicants.

Quinn (1978), using national survey data whereby the interviewers rated respondents' looks on a three point scale, finds that "strikingly handsome" or "good looking" men and women earn more than "average" looking men and women who, in turn, earn more than "quite plain" or "homely" men and women.

May (1980) tests the relationship between waitress attractiveness and tip size, using data from a large midwestern restaurant. Each waitress is asked to record on her guests' checks the tip amount. Attractiveness is measured by seven individuals whose responses are averaged to create an attractiveness index. May finds that when waitresses are evaluated as having rendered excellent service, highly attractive waitresses earn a mean percent tip of 17.3%, compared to only 14.9% for less attractive waitresses. When waitresses are evaluated as having given poor service, the more attractive waitresses earn a mean percent tip of 20.3%, compared to only 11.9% for the less attractive. However, neither of these differences is statistically significant.

Ross and Ferris (1981) examine the relationship between physical attractiveness and performance ratings and salaries at two public accounting firms. In their study, which incorporates only males, attractiveness is based on five-point scale ratings by outside persons. The authors find that, for junior staff accountants at both firms, while attractiveness has no salary impact, it does have an impact on their performance ratings. For senior staff accountants, attractiveness has no impact on either salary or performance ratings.

Roszell, Kennedy, and Grabb (1989) use data from a multi-wave national study of social change in Canada to examine the relationship between physical appearance in 1979 and annual income in 1981. Physical attractiveness is based on a five-point subjective rating of each respondent by the interviewer. The authors find a positive relationship between physical attractiveness and income for men, older persons, and those engaged in occupations filled primarily by men. Women, younger respondents, and those working in occupations largely performed by women tend not to gain any significant economic return from greater physical attractiveness.

Frieze, Olson, and Russell (1991) use data on MBA graduates to examine the effect of physical attractiveness on both starting, and later, salary. Attractiveness is based on a five-point scale rating by outside persons of photographs of the graduates upon first entering the MBA program. The authors find that, for men, attractiveness results in both higher starting, and later,

salaries. For women, while attractiveness is unrelated to their starting salary, more attractive females earn more later on in their jobs.

Hornik (1992) examines the percent tips of four waiters and four waitresses selected from a pool of twenty-seven servers on the basis of their physical attractiveness. Attractiveness is measured by a group of customers not participating in the study. One-half of each of the four waiters and waitresses were scored as highly attractive, while one-half of each were scored as low on attractiveness by the customers. Using tip data collected from 248 mixed-couple diners, Hornik finds that more attractive servers earn higher tips.

Hamermesh and Biddle (1994) examine three data sets, one Canadian and two U.S., and find that plain-looking people earn less than average-looking people who, in turn, earn less than good-looking people. Furthermore, the authors find the plainness penalty to be somewhat larger than the beauty premium, and that both are higher for men. Attractiveness in this study is based on five-point scale ratings of respondent attractiveness by the interviewer. In trying to explain their results, Hamermesh and Biddle examine three hypotheses – occupational sorting, customer discrimination (sorting, productivity differences), and employer discrimination (pure discrimination) – all of which are tested within a nested framework. While the authors find some evidence that the labor market sorts the most attractive people into occupations where looks are productive, they claim that support is strongest for the pure discrimination hypothesis. They find no evidence of occupational crowding along the dimension of beauty.

Biddle and Hamermesh (1998) use a sample of lawyers from Law School X in order to try and better minimize differences in wages that might result from productivity differences. Attractiveness is measured on a five-point scale by outside persons, using the lawyers' matriculation photographs. Biddle and Hamermesh test three hypotheses of why a beauty wage gap might exist – employer discrimination, customer pure discrimination, and customer productive discrimination. The latter refers to the idea that a lawyer's beauty might be productive for a client, like if juries discriminate based on looks. The authors find the most support for customer pure discrimination, which says that clients prefer more attractive lawyers, even when looks do not produce better settlements or judgements. They also find evidence of dynamic sorting, which refers to the idea that workers systematically move from one sector to another as their career progresses.

Solnick and Schweitzern (1999) explore the influence of physical attractiveness and gender on bargaining behavior, using an ultimatum game. They first have seventy subjects make ultimatum decisions as both proposer and responder. Each of the seventy subjects is then judged on their physical attractiveness by twenty raters on an eleven-point scale. Solnick and Schweitzern use these ratings to select the six most, and least, attractive males and females out of the seventy subjects. Finally, seventy-eight proposers and thirty responders participate in an ultimatum game with each of the twenty-four persons previously selected as most, and least, attractive. Proposers make offers, while responders specify minimum acceptable offers. The authors find that offers to attractive people are higher than offers to unattractive people.

Lynn and Simons (2000) examine the relationship between physical attractiveness and absolute tip size for fifty-one restaurant servers. Ten judges rated the servers' attractiveness using photographs. Each server's charge bill and tips were recorded over a six-week period and then averaged. Lynn and Simons find that more attractive servers earn higher average absolute tips, holding other factors constant.

Pfann, Biddle, Hamermesh, and Bosman (2000) examine a sample of Dutch advertising firms and find that those firms with more attractive executives report higher revenues. They attribute this finding to customer discrimination. Executive attractiveness in their paper is based on five-point scale ratings by outside persons.

Harper (2000) uses longitudinal data from Britain's National Child Development Study to examine the effect of physical appearance on hourly earnings, employment pattern, and family income. Attractiveness is measured on a five-point scale by the respondents' teachers at ages 7 and 11. While Harper finds no premium associated with being attractive, there is a penalty for plainness that is somewhat higher for males than females. Harper attributes the bulk of this plainness penalty to pure employer discrimination, but cautions that there is some evidence that also points to customer discrimination.

Bowles, Gintis, and Osborne (2001) are interested in why apparently irrelevant traits, such as attractiveness, earn a competitive reward in the labor market. They say that this phenomenon reflects the covariation of these traits with behaviors sought by employers. For example, obesity, because it correlates strongly with health problems, is probably punished in the labor market.

Hamermesh, Meng, and Zhang (2002) examine how female workers' looks might be affected by their efforts to improve upon such looks, as well as how those efforts might affect labor

market outcomes. The authors use a data set from Shanghai, China, which contains a category "spending on wife's clothing and cosmetics." The data set also includes interviewer ratings of the respondents' attractiveness, based on a five-point scale. Hamermesh, Meng, and Zhang find that beauty increases a woman's earnings, and that additional spending on clothing and cosmetics has a positive marginal impact on a woman's perceived beauty. Most of this spending, they say, represents consumption, and not investment, since such purchases pay back no greater than 15% of additional units of expenditure in the form of increased earnings.

French (2002), using data from two work sites, a non-profit hospital and a large school district, finds that females with above average appearance earn 8% more than females with average appearance. Females with below average appearance earn no more, or less, than average looking females. For males, there is no effect of appearance on earnings. In this paper, attractiveness is based on a self-rated, three-point scale.

My work adds to this literature in several ways. First, I argue that using a tipping data set, as I do here, offers several advantages over the data sets used in the above studies of the beauty wage gap. I elaborate on these advantages in detail in Section 3.

Secondly, my work represents a serious improvement over those studies that have already examined the beauty wage gap using a tipping data set.[22] May (1980) considers only waitresses, and at a single restaurant, in her study. Furthermore, attractiveness is measured not by those paying the bill, but by outside observers. In examining the beauty wage gap, what matters is not what some outside observer thinks about the worker's attractiveness, but what the person actually paying that worker thinks about the worker's attractiveness. In my work, I rely on customer ratings of attractiveness, since it is the customer who pays the server. Finally, May never reveals what kind of scale her attractiveness ratings are based on, nor is she clear regarding the types of statistical methods upon which her conclusions are based. Hornik (1992) represents somewhat of an improvement over May (1980), in that he also considers waiters, in addition to waitresses. However, like May (1980), Hornik also relies on outside observers' evaluations of servers' attractiveness. Hornik also fails to hold constant characteristics of the customer, and holds constant only a few server characteristics, in his analysis of the beauty wage gap. I hold constant both server and customer characteristics in my analysis. Finally, Lynn and Simons

[22] It should be noted that these studies are not really "wage gap studies", in that they do not approach their analyses from a wage gap perspective.

(2000), like Hornik (1992) and May (1980), also rely on outside observers' evaluations of attractiveness. As well, while they consider several male and female servers, in the end Lynn and Simons are left with only fifty-one observations upon which to base their conclusions. Finally, while Lynn and Simons do hold constant a few server characteristics, they fail to hold constant customer characteristics.

3. Data

I collected survey data from five Richmond, Virginia area restaurants, described in Table 10, during May and June of 2003. At each restaurant, the data were collected on each of a Thursday, Friday, and Saturday evening, from 6 p.m. until roughly 10 p.m. Customers were approached as they exited the restaurant, and the same two people, both myself and my assistant, administered the surveys at all five of the restaurants. Table 11 summarizes the number of surveys collected at each restaurant. A copy of the survey is available in Appendix C.

I want to now elaborate on the advantages of using a tipping data set to examine the beauty wage gap. First, think of each customer as a different employer who pays a wage to the server, in the form of a tip. Economic theory says that wages are based on productivity, and the most obvious measure of a server's productivity is the quality of service he provides to his customers. Instead of having to rely on a variety of human capital proxies, like other papers must do, I can actually measure productivity. Question 9 on the survey asks respondents to rate the service quality they received from their server on a scale from 1 to 7. Three dummy variables are created, representing good (5, 6, 7), average (4), and bad (1, 2, 3) service. A possible problem is that those who discriminate based on attractiveness might rate less attractive servers as also providing worse service quality. This might cause the effect of attractiveness on beauty to be underestimated.

Table 10 – Description of Restaurants Surveyed

Restaurant	Appetizers	Salads As Meal	Sandwiches	Entrees	Type of Rest.
Extra Billy's	$3.25-$5.45	$6.25-$7.25	$5.95-$7.25	$6.75-$14.95	BBQ
Memphis BBQ	$2.99-$7.99	$6.99-$8.49	$5.99-$6.49	$8.99-$15.99	BBQ
The Grapevine II	$4.95-$9.95	$6.25-$7.25	NA	$7.95-$16.95	Greek/Italian
Melito's	$2.35-$4.95	$6.75-$7.95	$4.25-$7.35	$8.15-$17.95	Italian/Amer.
Shackleford's	$3.50-$10.90	$8.50-$9.95	$6.95-$11.95	$13.95-$24.95	Amer./Seafood

Table 11 – Number of Surveys Collected at Each Restaurant

Restaurant	# Surveys Collected	# Rejections	Response Rate
Extra Billy's	103	21	83.1%
Memphis BBQ	83	19	81.4%
The Grapevine II	89	16	84.8%
Melito's	120	51	70.2%
Shackleford's	106	22	82.8%
Total	**501**	**129**	**79.5%**

Secondly, I can rule out causality that might exist between earnings and beauty. For example, while beauty might cause earnings, it might also be the case that earnings cause beauty. Here, beauty is being measured at the time the wage is given, instead of by an interviewer asking a respondent about their yearly income, and then rating that respondent's beauty.

Third, a tipping data set provides a server's earnings at a point in time. It is extremely difficult to compare people's wages over the span of, say, even a year. For example, two otherwise identical people working in the same job might earn different amounts of money in a given year because one of them might have had to take some extra sick days, beyond what he was originally allocated. Such a problem does not arise with a tipping data set, in that the time span of employment lasts only as long as the customer dines.

Fourth, I use the customers' ("employers'") ratings of server attractiveness, instead of relying on the ratings of outside observers. In examining the effect of attractiveness on earnings, what matters is not what some outside observer thinks about the worker's attractiveness, but what the person actually paying that worker thinks about the worker's attractiveness. Question 11 on the survey, which I borrowed from Biddle and Hamermesh (1998), asks respondents to rate their server's attractiveness on a five-point scale as either homely (1), below average (2), average (3), above average (4), or strikingly handsome/beautiful (5). Consistent with Biddle and Hamermesh (1998), three dummy variables are created, representing above average (4, 5), average (3), and below average (1,2) attractiveness. The distributions of these ratings across servers are given in Table 12. It is interesting to note the small fraction of servers in the below average category of attractiveness. For example, Hamermesh and Biddle (1994), using two broad household surveys, report double-digit percentages of American men and women that are of below average attractiveness, as I define below average attractiveness. The small fraction of below average servers in my study is likely due to self-selection.

Table 12 – Distribution of Attractiveness Ratings Across Servers

Attractiveness	Frequency	Percentage
Below Average	6	1.95%
Average	170	55.37%
Above Average	131	42.67%

Fifth, I control not only for various server characteristics, but I control for several characteristics of the customer ("employer") as well. For a look at the various types of questions asked, refer to the survey.

Finally, what makes Hamermesh and Biddle (1994) a seminal paper is that they were the first to offer a nontrivial explanation of their beauty wage gap result. Two of their hypotheses had to do with customer versus employer discrimination. Employer discrimination refers to the idea that employers might simply prefer more attractive workers over less attractive ones. Customer discrimination, on the other hand, refers to the idea that customers might prefer to deal with more attractive workers, so that more attractive workers are more productive than their less attractive counterparts. Thus, the employer will pay the latter less, based on differences in productivity. With tipping, the customer is the employer. Thus, if more attractive servers earn more than less attractive servers, ceteris paribus, then pure discrimination is the likely culprit.

The second parts of questions 4 and 5 were used as filters. They asked, respectively, whether or not the respondent received help paying both the bill and the tip. I did not want to include in my data set customers who paid for the bill, but were assisted by others in paying either the tip or the bill. In either of these cases, the customer's tip that is recorded on the survey may or may not be an accurate reflection of that customer's tipping behavior.

I began with a total of 501 observations. However, after cleaning the data, I was left with 307 observations. The data were cleaned by deleting those observations for which respondents either did not provide an answer, or for which respondents provided an ambiguous response, to the most critical questions on the survey. These questions are 1 – 7 and 9 - 24.

I am unable to identify specific servers in the data set as, say, "server x". Survey respondents did not identify their server beyond the characteristics asked for by the survey. For example, if the distribution of servers by sex reveals that 200 of the survey respondents reported having a female server, this does not imply that the sample consists of 200 different female servers. In

order to gain some kind of an idea regarding how many male and female servers the data set is based upon, Table 13 provides a breakdown of the number of male and female servers working at each restaurant, during each night the surveys were administered. A description of the variables used in my analysis, as well as summary statistics, is given in Table 14.

Table 13 – Number of Male and Female Servers

Restaurant	Evening	Male Servers	Female Servers
Extra Billy's	Thursday	4	5
Extra Billy's	Friday	1	6
Extra Billy's	Saturday	2	6
Memphis BBQ	Thursday	2	3
Memphis BBQ	Friday	5	2
Memphis BBQ	Saturday	3	4
The Grapevine II	Thursday	3	2
The Grapevine II	Friday	4	2
The Grapevine II	Saturday	4	3
Melito's	Thursday	0	3
Melito's	Friday	0	4
Melito's	Saturday	0	4
Shackleford's	Thursday	1	5
Shackleford's	Friday	1	6
Shackleford's	Saturday	3	3

Table 14 – Description of Variables and Summary Statistics (N = 307)

Variable	Description	x-bar	s
tip	$ amount of tip	6.52	4.28
% tip	percentage tip	23.22	30.88
bill	size of bill	34.67	21.99
bill2	size of bill squared	----	----
tipnorm[23]	tipper's belief regarding the tip norm	5.84	4.03
tipnorm2	tipper's belief regarding the tip norm squared		
tablesize	table size	2.79	1.38
numchecks	number of checks	1.13	0.60
age	tipper's age	44.69	12.15
attserver	dummy equal to 1 if server attractiveness rated as 4 or 5; 0 otherwise	0.43	0.50
uglserver	dummy equal to 1 if server attractiveness rated as 1 or 2; 0 otherwise	0.02	0.14
avgservera	dummy equal to 1 if server attractiveness rated as 3, 0 otherwise	0.55	0.50
maleserver	dummy equal to 1 if server male, 0 otherwise	0.30	0.46
goodservice	dummy equal to 1 if service rated as 5, 6, or 7; 0 otherwise	0.88	0.33
badservice	dummy equal to 1 if service rated as 1, 2, or 3; 0 otherwise	0.04	0.19
avgservice	dummy equal to 1 if service rated as 4, 0 otherwise	0.08	0.28
whiteserver	dummy equal to 1 if server white, 0 otherwise	0.94	0.24
thinserver	dummy equal to 1 if server weight rated as 1 or 2; 0 otherwise	0.08	0.27
fatserver	dummy equal to 1 if server weight rated as 4 or 5; 0 otherwise	0.08	0.27
avgserverw	dummy equal to 1 if server weight rated as 3; 0 otherwise	0.84	0.37
melito	restaurant dummy equal to 1 if restaurant Melito's, 0 otherwise	0.26	0.44
eb	restaurant dummy equal to 1 if restaurant Extra Billy's, 0 otherwise	0.21	0.41
memphis	restaurant dummy equal to 1 if restaurant Memphis BBQ, 0 otherwise	0.18	0.39
grapevine	restaurant dummy equal to 1 if restaurant Grapevine II, 0 otherwise	0.18	0.38
shackle	restaurant dummy equal to 1 if restaurant Shackleford's, 0 otherwise	0.17	0.38
religion	dummy equal to 1 if tipper regularly attends religious services, 0 otherwise	0.50	0.50
paymethod	dummy equal to 1 if tipper paid by either credit card or atm card, 0 otherwise	0.69	0.46
hidinfrq	dummy equal to 1 if dining frequency equal to 5, 6 or 7; 0 otherwise	0.29	0.46
lodinfrq	dummy equal to 1 if dining frequency equal to 1, 2, or 3; 0 otherwise	0.55	0.50
avgdinfrq	dummy equal to 1 if dining frequency equal to 4, 0 otherwise	0.15	0.36
tipperserv	dummy equal to 1 if tipper was ever a server, 0 otherwise	0.31	0.46

[23] The variable tipnorm is given in terms of dollars and cents. To calculate tipnorm, I took the tipper's percentage tip norm and applied it to his bill amount.

Table 14 (cont'd) – Description of Variables and Summary Statistics (N = 307)

Variable	Description	x-bar	s
famserv	dummy equal to 1 if tipper's close family/friends ever a server, 0 otherwise	0.70	0.46
parents	dummy equal to 1 if tipper is a tax dependent on parents, 0 otherwise	0.03	0.16
male	dummy equal to 1 if tipper is male, 0 otherwise	0.66	0.47
married	dummy equal to 1 if tipper is married, 0 otherwise	0.75	0.44
hiincome	dummy equal to 1 if tipper's income rated as 4 or 5; 0 otherwise	0.83	0.38
loincome	dummy equal to 1 if tipper's income rated as 1 or 2; 0 otherwise	0.07	0.25
avgincome	dummy equal to 1 if tipper's income rated as 3; 0 otherwise	0.10	0.31
somecollege	dummy equal to 1 if, at most, tipper has had some college; 0 otherwise	0.18	0.38
bachdegree	dummy equal to 1 if, at most, tipper has a bachelor's degree; 0 otherwise	0.40	0.49
graddegree	dummy equal to 1 if, at most, tipper has a graduate or professional degree; 0 otherwise	0.32	0.47
highschool	dummy equal to 1 if, at most, tipper has completed high school; 0 otherwise	0.10	0.30
atttipper	dummy equal to 1 if tipper attractiveness rated as 4 or 5; 0 otherwise	0.34	0.48
ugltipper	dummy equal to 1 if tipper attractiveness rated as 1 or 2; 0 otherwise	0.04	0.19
avgtipper	dummy equal to 1 if tipper attractiveness rated as 3, 0 otherwise	0.62	0.49
attmaleserver	dummy equal to 1 if server sex is male and server attractiveness rated as 4 or 5; 0 otherwise	0.09	0.28
avgmaleserver	dummy equal to 1 if server sex is male and server attractiveness rated as 3; 0 otherwise	0.20	0.40
uglmaleserver	dummy equal to 1 if server sex is male and server attractiveness rated as 1 or 2; 0 otherwise	0.01	0.11
attfemaleserver	dummy equal to 1 if server sex is female and server attractiveness rated as 4 or 5; 0 otherwise	0.34	0.47
avgfemaleserver	dummy equal to 1 if server sex is female and server attractiveness rated as 3; 0 otherwise	0.36	0.48
uglfemaleserver	dummy equal to 1 if server sex is female and server attractiveness rated as 1 or 2; 0 otherwise	0.01	0.08

4. Econometric Specification

The dollar value of the tip was used as the dependent variable in my analysis, and all variables measured on an ordinal scale, like server attractiveness, were made into dummy

variables. The latter was done because, according to Spanos (1999), the mean, variance, and covariance, all of which are the building blocks of regression analysis, have no obvious interpretation for ordinal variables.

An important issue surrounding the estimation of any model is that of statistical adequacy. Statistical adequacy refers to the notion that the assumptions underlying the model are satisfied, both so that the estimates retain their desirable properties (i.e. unbiasedness or consistency), and so that any inference made using the model is legitimate. According to Spanos (1986), in order to claim a statistically adequate OLS model, a crucial requirement is that the error term be NIID (normally distributed, independent, and identically distributed).[24] This NIID requirement can, and should, be tested, as described below. (see Section 4.4 in Chapter 2).

I ran three regressions – Regression 1, Regression 2, and Regression 3 – on my data set. The first was a simple OLS regression, while the last two used an FGLS (Feasible Generalized Least Squares) procedure to correct for heteroskedasticity. FGLS is essentially a weighted least squares procedure that corrects for heteroskedasticity. For both Regression 2 and Regression 3, weights were obtained by taking the log of the squared residual of the original model and then regressing this on the model's independent variables, as well as the model's independent variables, squared. This yielded a new model. I obtained the fitted values, y-hat, of this new model and then calculated my weight = sqrt($e^{y\text{-hat}}$).

Final misspecification testing, which is described in Section 4.4 of Chapter 2, lent support for all of the necessary statistical assumptions but normality. However, according to Spanos (1986), " . . . relaxing normality but retaining linearity and homoskedasticity might not constitute a major break from the linear regression framework." This is because there are few distributions, other than the normal, that can have both a linear regression function and a homoskedastic skedastic function.

5. Results

In this section, results will be presented from the three regressions. The results from Regression #1, shown in Table 15, establish that a beauty wage gap exists. Attractive servers earned roughly 77 cents more than their average-looking counterparts (p = .008, two-tailed).

[24] Spanos (1986) terms a statistically adequate OLS model the Normal Linear Regression Model (NLRM).

However, no significant difference was found between the earnings of below average and average-looking servers ($p = .838$, two-tailed). This is probably due to the fact that only 1.95% of the sample was rated as below average in attractiveness.

The wage gap illustrated in Regression #1 might be due to factors other than beauty. For example, it might be that less attractive servers are less productive than their more attractive counterparts. Therefore, Regression #2, in addition to controlling for server productivity, also incorporates variables that control for both server and customer demographics. The results of Regression #2 are also reported in Table 15. It can be seen that, even after controlling for these additional factors, attractive servers still earned more in tips than their average-looking counterparts ($p = .004$, two-tailed). The fact that a beauty wage gap exists, even after controlling for other factors, is evidence of labor market discrimination based on beauty. However, just like in Regression #1, no significant difference was found between the tip earnings of below average and average-looking servers ($p = .386$, two-tailed). Again, this can most likely be attributed to the low percentage of below average-looking servers in the sample.

Finally, using Regression #3, I examined wage gap differences between male and female servers. Results will be presented only for those male and female servers rated as attractive, given the small percentage of below average servers in the sample. Six dummy variables were created to correspond to an attractive male (female), an average-looking male (female), and a below average male (female). The results are presented in Table 16. Both sets of results come from the same regression, but the results from Regression #3a are based on suppressing the attractive female dummy, while those from Regression #3b are based on suppressing the attractive male dummy.

Regression #3a indicates that attractive looking females earn roughly 42 cents more in tips than their average-looking counterparts ($p = .043$, two-tailed). According to Regression #3b, there is no significant difference between the tip earnings of attractive and average-looking males ($p = .858$, two-tailed). Finally, Regression #3a (or Regression #3b) reveals no significant difference between the tip earnings of attractive males and attractive females ($p = .682$, two-tailed).

Table 15 – Results From Regressions #1 (OLS) and #2 (FGLS) (N = 307)

Variable	REG 1	SE	P-Value (two-tailed)		REG 2	SE	P-Value (two–tailed)
tip	dep var	----	----		dep var	----	----
constant	2.25	0.39	<.001***		1.48	1.06	0.163
bill	0.09	0.01	<.001***		0.10	0.02	<.001***
bill2	0.0004	0.0001	<.001***		----	----	----
attserver	0.77	0.29	0.008***		0.58	0.20	0.004***
uglserver	-0.21	1.04	0.838		-0.65	0.75	0.386
tipnorm	----	----	----		0.21	0.09	0.021**
tablesize	----	----	----		-0.10	0.09	0.278
numchecks	----	----	----		1.13	0.49	0.021**
age	----	----	----		-0.02	0.01	0.019**
maleserver	----	----	----		0.11	0.25	0.676
goodservice	----	----	----		-0.14	0.36	0.693
badservice	----	----	----		-1.06	0.58	0.066*
whiteserver	----	----	----		0.48	0.34	0.158
thinserver	----	----	----		0.07	0.32	0.819
fatserver	----	----	----		0.76	0.51	0.135^
melito	----	----	----		0.33	0.31	0.288
eb	----	----	----		0.12	0.37	0.756
memphis	----	----	----		-0.51	0.33	0.117
grapevine	----	----	----		0.10	0.36	0.790
religion	----	----	----		-0.03	0.20	0.873
paymethod	----	----	----		0.11	0.24	0.644
hidinfrq	----	----	----		-0.69	0.36	0.052*
lodinfrq	----	----	----		-0.91	0.31	0.004***
tipperserv	----	----	----		0.35	0.23	0.130^
famserv	----	----	----		0.02	0.22	0.938
parents	----	----	----		0.71	0.39	0.067*
male	----	----	----		0.64	0.21	0.002***
married	----	----	----		-0.52	0.33	0.112^
hiincome	----	----	----		0.23	0.52	0.654
loincome	----	----	----		-0.31	0.76	0.679
somecollege	----	----	----		0.81	0.44	0.067*
bachdegree	----	----	----		0.02	0.36	0.953
graddegree	----	----	----		0.18	0.37	0.630
atttipper	----	----	----		-0.08	0.21	0.690
ugltipper	----	----	----		-0.19	0.49	0.693

Table 15 (cont'd) – Results From Regressions #1 (OLS) and #2 (FGLS) (N = 307)

Variable	REG 1	SE	P-Value (two-tailed)		REG 2	SE	P-Value (two–tailed)
F-Statistic	150.84	----	<.001***		160.26	----	<.001***
R^2	.66	----	----		.65[25]	----	----
Shapiro-Wilk Normality Test	----	----	<.001***		----	----	<.001***
Skewness-Kurtosis Test for Normality	----	----	<.001***		----	----	<.001***
RESET Linearity Test	----	----	.324		----	----	.594
Cook-Weisberg Heteroskedasticity Test	----	----	.553		----	----	.076*

***Significant at 1%, **Significant at 5%,
*Significant at 10%, ^Significant at 15%

[25] The R^2 presented here comes from the original, pre-FGLS model. This is because a traditional R^2 is meaningless in an FGLS model.

Table 16 – Results From FGLS Regressions #3a and #3b (N = 307)

Variable	REG 3a	SE	P-Value (two-tailed)	REG 3b	SE	P-Value (two-tailed)
tip	dep var	----	----	dep var	----	----
constant	1.86	0.83	0.026**	1.74	0.88	0.050**
bill	-0.01	0.04	0.748	-0.01	0.04	0.748
bill2	0.002	0.0004	0.001***	0.002	0.0004	0.001***
attmaleserver	-0.12	0.29	0.682	----	----	----
avgmaleserver	-0.17	0.23	0.463	-0.05	0.26	0.858
uglmaleserver	-0.54	0.81	0.511	-0.42	0.82	0.611
attfemaleserver	----	----	----	0.12	0.29	0.682
avgfemaleserver	-0.42	0.21	0.043**	-0.30	0.28	0.290
uglfemaleserver	-1.51	0.72	0.038**	-1.39	0.76	0.068*
tipnorm	0.58	0.17	0.001***	0.58	0.17	0.001***
tipnorm2	-0.03	0.01	0.010***	-0.03	0.01	0.010***
tablesize	-0.18	0.09	0.043**	-0.18	0.09	0.043**
numchecks	1.10	0.47	0.020**	1.10	0.47	0.020**
age	-0.01	0.01	0.053*	-0.01	0.01	0.053*
goodservice	0.02	0.27	0.940	0.02	0.27	0.940
badservice	-1.01	0.49	0.039**	-1.01	0.49	0.039**
whiteserver	0.16	0.25	0.512	0.16	0.25	0.512
thinserver	0.18	0.25	0.489	0.18	0.25	0.489
fatserver	0.39	0.30	0.188	0.39	0.30	0.188
melito	0.18	0.28	0.512	0.18	0.28	0.512
eb	0.20	0.28	0.474	0.20	0.28	0.474
memphis	-0.47	0.25	0.065*	-0.47	0.25	0.065*
grapevine	0.24	0.30	0.425	0.24	0.30	0.425
religion	0.06	0.17	0.733	0.06	0.17	0.733
paymethod	-0.11	0.18	0.553	-0.11	0.18	0.553
hidinfrq	-0.26	0.26	0.326	-0.26	0.26	0.326
lodinfrq	-0.58	0.22	0.009***	-0.58	0.22	0.009***
tipperserv	0.13	0.18	0.469	0.13	0.18	0.469
famserv	0.13	0.17	0.460	0.13	0.17	0.460
parents	0.67	0.63	0.281	0.67	0.63	0.281
male	0.36	0.17	0.032**	0.36	0.17	0.032**
married	-0.77	0.28	0.006***	-0.77	0.28	0.006***
hiincome	0.70	0.39	0.071*	0.70	0.39	0.071*
loincome	0.52	0.60	0.390	0.52	0.60	0.390
somecollege	0.70	0.33	0.033**	0.70	0.33	0.033**
bachdegree	0.45	0.28	0.105*	0.45	0.28	0.105*
graddegree	0.61	0.29	0.035**	0.61	0.29	0.035**
atttipper	-0.04	0.19	0.811	-0.04	0.19	0.811
ugltipper	-0.54	0.30	0.076*	-0.54	0.30	0.076*

Table 16 (cont'd) – Results From FGLS Regressions #3a and #3b (N = 307)

Variable	REG 3a	SE	P-Value (Two-Tailed)		REG 3b	SE	P-Value (Two-Tailed)
F-Statistic	273.79	----	<.001***		273.79	----	<.001***
R^2	.67[26]	----	----		.67[27]	----	----
Shapiro-Wilk Normality Test	----	----	<.001***		----	----	<.001***
Skewness-Kurtosis Test for Normality	----	----	<.001***		----	----	<.001***
RESET Linearity Test	----	----	.128^		----	----	.128^
Cook-Weisberg Heteroskedasticity Test	----	----	.266		----	----	.266

***Significant at 1%, **Significant at 5%,
*Significant at 10%, ^Significant at 15%

6. Conclusion

This chapter examined the beauty wage gap using a tipping data set. Such a data set, it was argued, offers several advantages over the data sets used in previous studies. I found that more attractive servers earn more in tips than their average-looking peers. The failure to find a significant difference between the tip earnings of below average and average-looking servers is due most likely to the small percentage of the former in my sample which, in turn, is due most likely to self selection.

I also examined differences between male and female servers. While attractive female servers earn more in tips than their average-looking counterparts, the same cannot be said regarding male servers. Finally, there is no significant difference between the tip earnings of attractive male servers and attractive female servers.

Several possibilities exist for future research. First, I want to collect more survey data, in order to obtain more data on below average-looking servers. Second, I am in the process of obtaining survey data from Poland, so as to facilitate a U.S.-Poland comparison of the beauty wage gap. Finally, I want to also examine the male-female and black-white wage gap using a

[26] The R^2 presented here comes from the original, pre-FGLS model. This is because a traditional R^2 is meaningless in an FGLS model.
[27] The R^2 presented here comes from the original, pre-FGLS model. This is because a traditional R^2 is meaningless in an FGLS model.

tipping data set. The latter is an especially arduous task, as it is difficult to find restaurants that employ African-Americans.

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Appendix A

Instructions, Decision Sheets, and Post-Experiment Questionnaire from experiment in Chapter 2.

INSTRUCTIONS – ROOM A (DO NOT WRITE ON)

This is an experiment in economic decision-making. You will be paid $5 just for arriving on time. As well, you may earn an additional amount of money.

You have been randomly assigned a role (either A or B), according to the card you drew at the counter. Everyone in this room is in role A. You will be paired with different counterparts in the adjacent room to participate in seven decisions. You will not learn the identity of your counterparts, nor will they learn yours. In some decisions, you will also be randomly paired with one or more of your co-participants here in room A. These co-participant pairings have already been determined beforehand, as such, according to player number. However, as you have not yet received your player number, and player numbers will be distributed randomly, these co-participant pairings are random.

The card you are about to receive has several numbers written on it. One of these numbers is your **player number**, and is labeled as such. Your **player number** will be used for payment purposes. The other numbers on the card are your **decision-maker numbers**. You will have a different, and unique, **decision-maker number** in each of the seven decisions. Keep this card handy at all times, as you will need to refer to it throughout the experiment.

The counterparts in Room B will also have different, and unique, decision-maker numbers for each of the seven decisions. This is so that you will not know the identity of your counterpart in any given decision.

You will be paid, in cash, for one out of seven decisions. Everyone, including the counterparts in Room B, will be paid for the same decision. The decision for which you and everyone else will be paid will be randomly determined at the end of the experiment: Once all of the decisions have been completed, we will ask everyone to complete a short questionnaire, which will be used for research purposes only. Then, everyone will be brought together into one of the two rooms. The monitor will then show everyone the contents of a bag, containing seven poker chips (one for each decision). The chips will be placed back in the bag and the monitor will then ask a volunteer subject to draw a chip from the bag. The chip drawn will correspond to the decision for which you, and everyone else, will get paid. Your best strategy is to take every decision seriously, as that decision might be the one for which you get paid.

Subjects will be dismissed one at a time for payment. When your **player number** is called, come to the counter at the entrance. You will be paid and then asked to fill out a receipt form. Once you have completed the receipt form, you are done with the experiment and may leave.

In order to keep track of your earnings in each decision, you will be given a **record-keeping sheet**. On it, you should write down the amount that you earn in each decision.

Througout the entire experiment, **YOU MUST REMAIN QUIET! Failure to do so will result in dismissal from the experiment and forfeiture of payment.**

ARE THERE ANY QUESTIONS?

PRE-DECISION INFORMATION – ROOM A (DO NOT WRITE ON)

For each of the decisions in which you participate, you will have a counterpart from Room B. Right now, the two counterparts in Room B are completing a skill task. They will then be ranked into one of two groups, according to their performance on the skill task. The top performer on the skill task will be ranked into Group 1, while the bottom performer will be ranked into Group 2. For a given decision, your counterpart's ranking will determine an amount of money to be divided between you and the counterpart. A Group 1 ranking will always imply a higher division amount than a Group 2 ranking.

The counterparts will complete the skill task a total of 7 times today, once before each decision. Thus, a given counterpart's ranking may, or may not, be the same in each decision.

DECISION RED – ROOM A (DO NOT WRITE ON)

For this decision, you will be asked to sit at one of the tables. You will be randomly matched with a counterpart in Room B. You will not know who this person is, and this person will not know who you are, either during or after your decision.

Your counterpart's ranking, as determined by his/her skill, determines an amount of money to be divided between the two of you:

RANK	AMOUNT
Group 1	$28
Group 2	$14

The monitor in the adjacent room will record your counterpart's rank, your counterpart's decision-maker number for this decision, and the amount to be divided, as determined by your counterpart's skill, on a decision sheet. The monitor will then bring the sheet over to this room, where it will be distributed to you. Please make sure to put your **decision-maker number for decision RED** on the sheet where it asks you to (refer to the card given to you at the beginning of the experiment).

You must then indicate on the decision sheet how much money you wish to allocate to your counterpart, if any, and how much money you wish to keep for yourself. These values must exhaust the division amount shown on the decision sheet. For example, if your counterpart earned a Group 1 rank, then an allocation to your counterpart of $x implies you keep ($28 - $x) for yourself. The decision is totally up to you, and must be in increments of $.25. When you are done, please wait for the monitor to come by and collect your decision sheet. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

The monitor will then take the decision sheet over to the adjacent room, where it will be shown to your counterpart.

An Example

Suppose your counterpart, whose decision-maker number for decision RED is 1001, earned a Group 1 rank. This implies an amount to be divided of $28. Suppose your decision-maker number for decision RED is 1002. Further, suppose you wish to allocate $5.75 to your counterpart and keep $22.25 for yourself. You will record these values as illustrated by the monitor, and then wait for the monitor to come by and collect the decision sheet. The decision sheet will then be brought over to Room B, for your counterpart to look at. In this example, you would earn $22.25 and your counterpart would earn $5.75. **This is only an example – the actual decision is totally up to you.**

ARE THERE ANY QUESTIONS?

DECISION YELLOW – ROOM A (DO NOT WRITE ON)

For this decision, you have been randomly matched with a co-participant in this room. You and your randomly matched co-participant will be asked to sit at one of the tables, across from each other. You and your co-participant will then be randomly assigned a counterpart in Room B. Neither you nor your co-participant will know who this person is, and this person will not know who you all are, either during or after the decision.

The counterpart's ranking, as determined by his/her skill, determines an amount of money to be divided among you, your co-participant, and the counterpart:

RANK	AMOUNT
Group 1	$56
Group 2	$28

The monitor in the adjacent room will record the counterpart's rank, the counterpart's decision-maker number for this decision, and the amount to be divided, as determined by the counterpart's skill, on a decision sheet. The total division amount determined by the counterpart in Room B will be evenly allocated between you and your co-participant here in Room A. For example, if the counterpart's rank is Group 1, you and your co-participant will each receive $28 to divide with the counterpart.

The monitor will then bring the sheet over to this room, where it will be distributed to you and your co-participant. The sheet will be placed on the clipboard in front of you and your co-participant. The clipboard must remain in its initial position at all times. Please make sure to put your **decision-maker number for decision YELLOW** on the sheet where it asks you to (refer to the card given to you at the beginning of the experiment).

You must then indicate on the decision sheet how much money you wish to allocate to your counterpart, if any, and how much money you wish to keep for yourself. These values must exhaust the division amount shown on the decision sheet. For example, if your counterpart earned a Group 1 rank, then an allocation to your counterpart of $x implies you keep ($28 - $x) for yourself. The decision is totally up to you, and must be in increments of $.25. When you are done, leave the decision sheet on the clipboard and wait for the monitor to come by and collect it. We ask that you not discuss your decision with your co-participant. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

The monitor will then take the decision sheet over to the adjacent room, where it will be shown to you and your co-participant's counterpart.

An Example

Suppose your counterpart, whose decision-maker number for decision YELLOW is 1003, earned a Group 1 rank. This implies an amount to be divided of $56. Thus, you and your co-participant EACH will receive $28 to allocate between yourself and the counterpart in Room B. Suppose you and your co-participant's decision-maker numbers for decision YELLOW, respectively, are 1004 and 1005. Further, suppose you wish to allocate $2.50 to your counterpart and keep $25.50 for yourself, and your co-participant wishes to allocate $15 to the counterpart and keep $13 for himself/herself. Each of you will record these values as illustrated by the monitor on the decision sheet, and then wait for the monitor to come by and collect it. In this example, you would earn $25.50, your co-participant would earn $13, and your counterpart would earn $2.50 + $15 = $17.50. **This is only an example – the actual decision is totally up to you.**

ARE THERE ANY QUESTIONS?

DECISION BLACK – ROOM A (DO NOT WRITE ON)

For this decision, you have been randomly matched with a co-participant in this room. You and your randomly matched co-participant will be asked to sit at one of the tables, across from each other. You and your co-participant will then be randomly assigned a counterpart in Room B. Neither you nor your co-participant will know who this person is, and this person will not know who you all are, either during or after the decision.

The counterpart's ranking, as determined by his/her skill, determines an amount of money to be divided among you, your co-participant, and the counterpart:

RANK	AMOUNT
Group 1	$56
Group 2	$28

The monitor in the adjacent room will record the counterpart's rank, the counterpart's decision-maker number for this decision, and the amount to be divided, as determined by the counterpart's skill, on 2 decision sheets. The total division amount determined by the counterpart in Room B will be evenly allocated between you and your co-participant here in Room A. For example, if the counterpart's rank is Group 1, you and your co-participant will <u>each</u> receive $28 to divide with the counterpart.

The monitor will then bring the sheets over to this room, where they will be distributed to you and your co-participant. Please make sure to put your **decision-maker number for decision BLACK** on the sheet where it asks you to (refer to the card given to you at the beginning of the experiment).

You must then indicate on the decision sheet how much money you wish to allocate to your counterpart, if any, and how much money you wish to keep for yourself. These values must exhaust the division amount shown on the decision sheet. For example, if your counterpart earned a Group 1 rank, then an allocation to your counterpart of $x implies you keep ($28 - $x) for yourself. <u>The decision is totally up to you</u>, and must be in increments of $.25. When you are done, fold the decision sheet and then wait for the monitor to come by and collect it. We ask that you not discuss your decision with your co-participant. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

The monitor will then take the decision sheet over to the adjacent room, where it will be shown to you and your co-participant's counterpart.

<u>An Example</u>

Suppose your counterpart, whose decision-maker number for decision BLACK is 1006, earned a Group 1 rank. This implies an amount to be divided of $56. Thus, you and your co-participant EACH receive $28 to allocate between yourselves and the counterpart in Room B. Suppose your decision-maker number for decision BLACK is 1007. Further, suppose you wish to allocate $18.75 to your counterpart and keep $9.25 for yourself. You will record this allocation as illustrated by the monitor on your decision sheet, fold your decision sheet, and then wait for the monitor to come by and collect it. In this example, you would earn $9.25 and your counterpart would earn $18.75 plus whatever your co-participant decided to allocate to the counterpart. **This is only an example – the actual decision is totally up to you.**

ARE THERE ANY QUESTIONS?

DECISION BLUE – ROOM A (DO NOT WRITE ON)

For this decision, you have been randomly matched with 2 co-participants in this room. You and your randomly matched co-participants will be asked to sit at one of the tables, across from each other. You and your 2 co-participants will then be randomly assigned a counterpart in Room B. Neither you nor your 2 co-participants will know who this person is, and this person will not know who you all are, either during or after the decision.

The counterpart's ranking, as determined by his/her skill, determines an amount of money to be divided among you, your 2 co-participants, and the counterpart:

RANK	AMOUNT
Group 1	$84
Group 2	$42

The monitor in the adjacent room will record the counterpart's rank, the counterpart's decision-maker number for this decision, and the amount to be divided, as determined by the counterpart's skill, on a decision sheet. The total division amount determined by the counterpart in Room B will be evenly allocated between you and your 2 co-participants here in Room A. For example, if the counterpart's rank is Group 1, you and your 2 co-participants will each receive $28 to divide with the counterpart.

The monitor will then bring the sheet over to this room, where it will be distributed to you and your 2 co-participants. The sheet will be placed on the clipboard in front of you and your 2 co-participants. The clipboard must remain in its initial position at all times. Please make sure to put your **decision-maker number for decision BLUE** on the sheet where it asks you to (refer to the card given to you at the beginning of the experiment).

You must then indicate on the decision sheet how much money you wish to allocate to your counterpart, if any, and how much money you wish to keep for yourself. These values must exhaust the division amount shown on the decision sheet. For example, if your counterpart earned a Group 1 rank, then an allocation to your counterpart of $x implies you keep ($28 - $x) for yourself. The decision is totally up to you, and must be in increments of $.25. When you are done, leave the decision sheet on the clipboard and wait for the monitor to come by and collect it. We ask that you not discuss your decision with your 2 co-participants. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

The monitor will then take the decision sheet over to the adjacent room, where it will be shown to you and your co-participants' counterpart.

An Example

Suppose your counterpart, whose decision-maker number for decision BLUE is 1008, earned a Group 1 rank. This implies an amount to be divided of $84. Thus, you and your 2 co-participants EACH will receive $28 to allocate between yourselves and the counterpart in Room B. Suppose you and your 2 co-participants' decision-maker numbers for decision BLUE, respectively, are 1009, 1010, and 1011. Further, suppose you wish to allocate $3.25 to your counterpart and keep $24.75 for yourself, one of your co-participants wishes to allocate $8 to the counterpart and keep $20 for himself/herself, and the other co-participant wishes to allocate $15.75 to the counterpart and keep $12.25 for himself/herself. Each of you will record these values as illustrated by the monitor on the decision sheet, and then wait for the monitor to come by and collect it. In this example, you would earn $24.75, one co-participant would earn $20, the other co-participant would earn $12.25, and your counterpart would earn $3.25 + $8 + $15.75 = $27. **This is only an example – the actual decision is totally up to you.**

ARE THERE ANY QUESTIONS?

DECISION GREEN – ROOM A (DO NOT WRITE ON)

For this decision, you have been randomly matched with 2 co-participants in this room. You and your randomly matched co-participants will be asked to sit at one of the tables, across from each other. You and your 2 co-participants will then be randomly assigned a counterpart in Room B. Neither you nor your 2 co-participants will know who this person is, and this person will not know who you all are, either during or after the decision.

The counterpart's ranking, as determined by his/her skill, determines an amount of money to be divided among you, your 2 co-participants, and the counterpart:

RANK	AMOUNT
Group 1	$84
Group 2	$42

The monitor in the adjacent room will record the counterpart's rank, the counterpart's decision-maker number for this decision, and the amount to be divided, as determined by the counterpart's skill, on 3 decision sheets. The total division amount determined by the counterpart in Room B will be evenly allocated between you and your 2 co-participants here in Room A. For example, if the counterpart's rank is Group 1, you and your 2 co-participants will each receive $28 to divide with the counterpart.

The monitor will then bring the sheets over to this room, where they will be distributed to you and your 2 co-participants. Please make sure to put your **decision-maker number for decision GREEN** on the sheet where it asks you to (refer to the card given to you at the beginning of the experiment).

You must then indicate on the decision sheet how much money you wish to allocate to your counterpart, if any, and how much money you wish to keep for yourself. These values must exhaust the division amount shown on the decision sheet. For example, if your counterpart earned a Group 1 rank, then an allocation to your counterpart of $x implies you keep ($28 - $x) for yourself. The decision is totally up to you, and must be in increments of $.25. When you are done, fold the decision sheet and then wait for the monitor to come by and collect it. We ask that you not discuss your decision with your 2 co-participants. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

The monitor will then take the decision sheet over to the adjacent room, where it will be shown to you and your 2 co-participants' counterpart.

An Example

Suppose your counterpart, whose decision-maker number for decision GREEN is 1012, earned a Group 1 rank. This implies an amount to be divided of $84. Thus, you and your 2 co-participants EACH receive $28 to allocate between yourselves and the counterpart in Room B. Suppose your decision-maker number for decision GREEN is 1013. Further, suppose you wish to allocate $4.25 to your counterpart and keep $23.75 for yourself. You will record this allocation as illustrated by the monitor on your decision sheet, fold your decision sheet, and then wait for the monitor to come by and collect it. In this example, you would earn $23.75 and your counterpart would earn $4.25 plus whatever each of your 2 co-participants decided to allocate to the counterpart. **This is only an example – the actual decision is totally up to you.**

ARE THERE ANY QUESTIONS?

DECISION BROWN – ROOM A (DO NOT WRITE ON)

For this decision, you have been matched with 5 co-participants in this room. You and your co-participants will be asked to sit at one of the tables, across from each other. You and your 5 co-participants will then be randomly assigned a counterpart in Room B. Neither you nor your 5 co-participants will know who this person is, and this person will not know who you all are, either during or after the decision.

The counterpart's ranking, as determined by his/her skill, determines an amount of money to be divided among you, your 5 co-participants, and the counterpart:

RANK	AMOUNT
Group 1	$168
Group 2	$84

The monitor in the adjacent room will record the counterpart's rank, the counterpart's decision-maker number for this decision, and the amount to be divided, as determined by the counterpart's skill, on a decision sheet. The total division amount determined by the counterpart in Room B will be evenly allocated between you and your 5 co-participants here in Room A. For example, if the counterpart's rank is Group 1, you and your 5 co-participants will each receive $28 to divide with the counterpart.

The monitor will then bring the sheet over to this room, where it will be distributed to you and your 5 co-participants. The sheet will be placed on the clipboard in front of you and your co-participants. The clipboard must remain in its initial position at all times. Please make sure to put your **decision-maker number for decision BROWN** on the sheet where it asks you to (refer to the card given to you at the beginning of the experiment).

You must then indicate on the decision sheet how much money you wish to allocate to your counterpart, if any, and how much money you wish to keep for yourself. These values must exhaust the division amount shown on the decision sheet. For example, if your counterpart earned a Group 1 rank, then an allocation to your counterpart of $x implies you keep ($28 - $x) for yourself. The decision is totally up to you, and must be in increments of $.25. When you are done, leave the decision sheet on the clipboard and wait for the monitor to come by and collect it. We ask that you not discuss your decision with your co-participants. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

The monitor will then take the decision sheet over to the adjacent room, where it will be shown to you and your 5 co-participants' counterpart.

An Example

Suppose your counterpart, whose decision-maker number for decision BROWN is 1014, earned a Group 1 rank. This implies an amount to be divided of $168. Thus, you and your 5 co-participants EACH will receive $28 to allocate between yourselves and the counterpart in Room B. Suppose you and your co-participants' decision-maker numbers for decision BROWN, respectively, are 1015, 1016, 1017, 1018, 1019, and 1020. Further, suppose you wish to allocate $1.50 to the counterpart and keep $26.50 for yourself, one co-participant wishes to allocate $9 to the counterpart and keep $19 for himself/herself, another wishes to allocate $14.25 to the counterpart and keep $13.75 for himself/herself, another wishes to allocate $17.50 to the counterpart and keep $10.50 for himself/herself, another wishes to allocate $19.25 to the counterpart and keep $8.75 for himself/herself, and another wishes to allocate $12 to the counterpart and keep $16 for himself/herself. Each of you will record these values as illustrated by the monitor on the decision sheet, and then wait for the monitor to come by and collect it. In this example, you would earn $26.50, one co-participant would earn $19, another would earn $13.75, another would earn $10.50, another would earn $8.75, another would earn $16, and your counterpart would earn $1.50 + $9 + $14.25 + $17.50 + $19.25 + $12 = $73.50. **This is only an example – the actual decision is totally up to you.**

ARE THERE ANY QUESTIONS?

DECISION ORANGE – ROOM A (DO NOT WRITE ON)

For this decision, you have been randomly matched with 5 co-participants in this room. You and your randomly matched co-participants will be asked to sit at one of the tables, across from each other. You and your 5 co-participants will then be randomly assigned a counterpart in Room B. Neither you nor your 5 co-participants will know who this person is, and this person will not know who you all are, either during or after the decision.

The counterpart's ranking, as determined by his/her skill, determines an amount of money to be divided among you, your 5 co-participants, and the counterpart:

RANK	AMOUNT
Group 1	$168
Group 2	$84

The monitor in the adjacent room will record the counterpart's rank, the counterpart's decision-maker number for this decision, and the amount to be divided, as determined by the counterpart's skill, on 6 decision sheets. The total division amount determined by the counterpart in Room B will be evenly allocated between you and your 5 co-participants here in Room A. For example, if the counterpart's rank is Group 1, you and your co-participants will each receive $28 to divide with the counterpart.

The monitor will then bring the sheets over to this room, where they will be distributed to you and your 5 co-participants. Please make sure to put your **decision-maker number for decision ORANGE** on the sheet where it asks you to (refer to the card given to you at the beginning of the experiment).

You must then indicate on the decision sheet how much money you wish to allocate to your counterpart, if any, and how much money you wish to keep for yourself. These values must exhaust the division amount shown on the decision sheet. For example, if your counterpart earned a Group 1 rank, then an allocation to your counterpart of $x implies you keep ($28 - $x) for yourself. The decision is totally up to you, and must be in increments of $.25. When you are done, fold the decision sheet and then wait for the monitor to come by and collect it. We ask that you not discuss your decision with your co-participants. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

The monitor will then take the decision sheet over to the adjacent room, where it will be shown to you and your 5 co-participants' counterpart.

An Example

Suppose your counterpart, whose decision-maker number for decision ORANGE is 1021, earned a Group 1 rank. This implies an amount to be divided of $168. Thus, you and your 5 co-participants EACH receive $28 to allocate between yourselves and the counterpart in Room B. Suppose your decision-maker number for decision ORANGE is 1022. Further, suppose you wish to allocate $13.50 to your counterpart and keep $14.50 for yourself. You will record this allocation as illustrated by the monitor on your decision sheet, fold your decision sheet, and then wait for the monitor to come by and collect it. In this example, you would earn $14.50 and your counterpart would earn $13.50 plus whatever each of your 5 co-participants decided to allocate to the counterpart. **This is only an example – the actual decision is totally up to you.**

ARE THERE ANY QUESTIONS?

INSTRUCTIONS – ROOM B (DO NOT WRITE ON)

This is an experiment in economic decision-making. You will be paid $5 just for arriving on time. As well, you may earn an additional amount of money.

You have been randomly assigned a role (either A or B), according to the card you drew at the counter. Everyone in this room is in role B. You will be paired with different counterparts in the adjacent room to participate in seven decisions. You will not learn the identity of your counterparts, nor will they learn yours.

The card you are about to receive has several numbers written on it. One of these numbers is your **player number**, and is labeled as such. Your **player number** will be used for payment purposes. The other numbers on the card are your **decision-maker numbers**. You will have a different, and unique, **decision-maker number** in each of the seven decisions.

The counterparts in Room A will also have different, and unique, decision-maker numbers for each of the seven decisions. This is so that you will not know the identity of your counterpart in any given decision.

You will be paid, in cash, for one out of seven decisions. Everyone, including the counterparts in Room A, will be paid for the same decision. The decision for which you and everyone else will be paid will be randomly determined at the end of the experiment: Once all of the decisions have been completed, we will ask everyone to complete a short questionnaire, which will be used for research purposes only. Then, everyone will be brought together into one of the two rooms. The monitor will then show everyone the contents of a bag, containing seven poker chips (one for each decision). The chips will be placed back in the bag and the monitor will then ask a volunteer subject to draw a chip from the bag. The chip drawn will correspond to the decision for which you, and everyone else, will get paid. Your best strategy is to take every decision seriously, as that decision might be the one for which you get paid.

Subjects will be dismissed one at a time for payment. When your **player number** is called, come to the counter at the entrance. You will be paid and then asked to fill out a receipt form. Once you have completed the receipt form, you are done with the experiment and may leave.

In order to keep track of your earnings in each decision, you will be given a **record-keeping sheet**. On it, you should write down the amount that you earn in each decision.

Finally, throughout the entire experiment, **YOU MUST REMAIN QUIET! Failure to do so will result in dismissal from the experiment and forfeiture of payment.**

ARE THERE ANY QUESTIONS?

PRE-DECISION INFORMATION – ROOM B (DO NOT WRITE ON)

You will be given 2 minutes to complete a word search puzzle. Once the 2 minutes have expired, your word search will be scored according to the total number of words you found. The more words you find, the higher will be your score. You will then be ranked into one of two groups: Group 1 is the group with the higher score on the word search puzzle and Group 2 is the group with the lower score on the word search puzzle. In the event of a tie, another word search puzzle will be administered to break the tie.

The above word search puzzle process will be completed a total of 7 times today, once before each decision. Thus, your ranking may, or may not, be the same in each decision. Your ranking in a given decision will determine an amount of money to be divided between you and several different counterparts in the adjacent room. A higher ranking (i.e. Group 1) implies a higher division amount.

DECISION RED – ROOM B (DO NOT WRITE ON)

For this decision, you will be randomly matched with a counterpart in Room A. You will not know who this person is, and this person will not know who you are, either during or after this decision.

Your ranking determines an amount of money to be divided between you and your counterpart. For this decision, the amounts are indicated below:

RANK	AMOUNT
Group 1	$28
Group 2	$14

The monitor in this room will record your rank, your decision-maker number for this decision, and the amount to be divided, as determined by your ranking, on a decision sheet. The monitor will then bring the sheet over to Room A, where it will be randomly distributed to a counterpart.

Your counterpart must then indicate on the decision sheet how much money he/she wishes to allocate to you, if any, and how much money he/she wishes to keep for himself/herself. The decision is totally up to your counterpart, and must be in increments of $.25. When your counterpart is done, the monitor in Room A will come by and collect his/her decision sheet. The monitor will then bring the decision sheet over to this room, where it will be shown to you. The monitor will then walk by and collect the decision sheet. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

An Example

Suppose you earned a Group 1 rank, and that your decision-maker number for decision RED is 1023. This implies an amount to be divided of $28 between you and your counterpart. The monitor in this room will record this information on a decision sheet as such, and then bring it over to Room A. Suppose your counterpart, who has a decision-maker number of 1024 for decision RED, wishes to allocate $5.75 to you and keep $22.25 for himself/herself. Your counterpart will record these values as illustrated by the monitor, and then wait for the monitor to come by and collect the decision sheet. The decision sheet will then be brought back over to this room for you to look at. In this example, you would earn $5.75. **This is only an example – the actual decision is totally up to your counterpart.**

NOTE: AS THERE ARE 12 PERSONS IN ROOM A, AND ONLY 2 HERE IN ROOM B, YOU WILL PARTICIPATE IN 6 DECISION REDS. FOR EACH, YOU WILL HAVE A DIFFERENT COUNTERPART.

ARE THERE ANY QUESTIONS?

DECISION YELLOW – ROOM B (DO NOT WRITE ON)

For this decision, you have been randomly matched with 2 counterparts in Room A. Your 2 counterparts will be asked to sit at a table, across from each other. You will not know who these persons are, and they will not know who you are, either during or after this decision.

Your ranking determines an amount of money to be divided among you and your 2 counterparts. For this decision, the amounts are indicated below:

RANK	AMOUNT
Group 1	$56
Group 2	$28

The monitor in this room will record your rank, your decision-maker number for this decision, and the amount to be divided, as determined by your skill, on a decision sheet. The total division amount determined by your rank will be evenly allocated between your 2 counterparts in Room A. For example, if your rank is Group 1, your 2 counterparts will each receive $28 to divide with you.

The monitor will then bring the sheet over to Room A, where it will be randomly distributed to your 2 counterparts. The sheet will be placed on a clipboard in front of your 2 counterparts. This clipboard will remain stationary at all times.

Each of your counterparts must then independently indicate on the decision sheet how much money each wishes to allocate to you, if any, and how much money each wishes to keep for himself/herself. The decision is totally up to each of them, and must be in increments of $.25. Each of your counterparts will be instructed NOT to discuss their decision with each other. When they are done, they will leave the decision sheet on the clipboard and wait for the monitor to come by and pick it up. The monitor will then bring the decision sheet over to this room, where it will be shown to you. The monitor will then walk by and collect the decision sheet. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

An Example

Suppose you earned a Group 1 rank, and that your decision-maker number for decision YELLOW is 1025. This implies an amount to be divided of $56 between you and your 2 counterparts. Each counterpart will thus receive $28 to divide with you. The monitor in this room will record this information on a decision sheet as such, and then bring it over to Room A. Suppose one counterpart, who has a decision-maker number of 1026 for decision YELLOW, wishes to allocate $2.50 to you and keep $25.50 for himself/herself. The other counterpart, who has a decision-maker number of 1027 for decision YELLOW, wishes to allocate $15 to you and keep $13 for himself/herself. Your 2 counterparts will record these values as illustrated by the monitor, and then wait for the monitor to come by and collect the decision sheet. The decision sheet will then be brought back over to this room for you to look at. In this example, you would earn $2.50 + $15 = $17.50. **This is only an example – the actual decision is totally up to each of your 2 counterparts.**

NOTE: AS THERE ARE 12 PERSONS IN ROOM A, AND ONLY 2 HERE IN ROOM B, YOU WILL PARTICIPATE IN 3 DECISION YELLOWS. FOR EACH, YOU WILL HAVE DIFFERENT COUNTERPARTS.

ARE THERE ANY QUESTIONS?

DECISION BLACK – ROOM B (DO NOT WRITE ON)

For this decision, you have been randomly matched with 2 counterparts in Room A. Your 2 counterparts will be asked to sit at a table, across from each other. You will not know who these persons are, and they will not know who you are, either during or after this decision.

Your ranking determines an amount of money to be divided among you and your 2 counterparts. For this decision, the amounts are indicated below:

RANK	AMOUNT
Group 1	$56
Group 2	$28

The monitor in this room will record your rank, your decision-maker number for this decision, and the amount to be divided, as determined by your skill, on 2 decision sheets. The total division amount determined by your rank will be evenly allocated between your 2 counterparts in Room A. For example, if your rank is Group 1, your 2 counterparts will each receive $28 to divide with you.

The monitor will then bring the sheets over to Room A, where they will be randomly distributed to your 2 counterparts. Each of your counterparts must then independently indicate on the decision sheet how much money each wishes to allocate to you, if any, and how much money each wishes to keep for himself/herself. The decision is totally up to each of them, and must be in increments of $.25. Each of your counterparts will be instructed NOT to discuss their decision with each other. When they are done, they will fold their decision sheet, and then wait for the monitor to come by and pick it up. The monitor will then bring the decision sheets over to this room, where they will be shown to you. The monitor will then walk by and collect the decision sheets. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

An Example

Suppose you earned a Group 1 rank, and that your decision-maker number for decision BLACK is 1028. This implies an amount to be divided of $56 between you and your 2 counterparts. Each counterpart will thus receive $28 to divide with you. The monitor in this room will record this information on 2 decision sheets, and then bring them over to Room A. Suppose one of the 2 counterparts, who has a decision-maker number of 1029 for decision BLACK, wishes to allocate $2.50 to you and keep $25.50 for himself/herself. The counterpart will record these values as illustrated by the monitor, and then wait for the monitor to come by and collect his/her decision sheet. Both counterparts' decision sheets will then be brought back over to this room for you to look at. In this example, you would earn $2.50 plus whatever the other counterpart decided to allocate to you. **This is only an example – the actual decision is totally up to each of your 2 counterparts.**

NOTE: AS THERE ARE 12 PERSONS IN ROOM A, AND ONLY 2 HERE IN ROOM B, YOU WILL PARTICIPATE IN 3 DECISION BLACKS. FOR EACH, YOU WILL HAVE DIFFERENT COUNTERPARTS.

ARE THERE ANY QUESTIONS?

DECISION BLUE – ROOM B (DO NOT WRITE ON)

For this decision, you have been randomly matched with 3 counterparts in Room A. Your 3 counterparts will be asked to sit at a table, across from each other. You will not know who these persons are, and they will not know who you are, either during or after this decision.

Your ranking determines an amount of money to be divided among you and your 3 counterparts. For this decision, the amounts are indicated below:

RANK	AMOUNT
Group 1	$84
Group 2	$42

The monitor in this room will record your rank, your decision-maker number for this decision, and the amount to be divided, as determined by your skill, on a decision sheet. The total division amount determined by your rank will be evenly allocated between your 3 counterparts in Room A. For example, if your rank is Group 1, your 3 counterparts will each receive $28 to divide with you.

The monitor will then bring the sheet over to Room A, where it will be randomly distributed to your 3 counterparts. The sheet will be placed on a clipboard in front of your 3 counterparts. This clipboard will remain stationary at all times.

Each of your counterparts must then independently indicate on the decision sheet how much money each wishes to allocate to you, if any, and how much money each wishes to keep for himself/herself. The decision is totally up to each of them, and must be in increments of $.25. Each of your counterparts will be instructed NOT to discuss their decision with each other. When they are done, they will leave the decision sheet on the clipboard and wait for the monitor to come by and pick it up. The monitor will then bring the decision sheet over to this room, where it will be shown to you. The monitor will then walk by and collect the decision sheet. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

An Example

Suppose you earned a Group 1 rank, and that your decision-maker number for decision BLUE is 1031. This implies an amount to be divided of $84 between you and your 3 counterparts. Each counterpart will thus receive $28 to divide with you. The monitor in this room will record this information on a decision sheet as such, and then bring it over to Room A. Suppose one counterpart, who has a decision-maker number of 1032 for decision BLUE, wishes to allocate $3.25 to you and keep $24.75 for himself/herself. Another counterpart, who has a decision-maker number of 1033 for decision BLUE, wishes to allocate $8 to you and keep $20 for himself/herself. The other counterpart, who has a decision-maker number of 1034 for decision BLUE, wishes to allocate $15.75 to you and keep $12.25 for himself/herself. Your 3 counterparts will record these values as illustrated by the monitor, and then wait for the monitor to come by and collect the decision sheet. The decision sheet will then be brought back over to this room for you to look at. In this example, you would earn $3.25 + $8 + $15.75 = $27. **This is only an example – the actual decision is totally up to each of your 3 counterparts.**

NOTE: AS THERE ARE 12 PERSONS IN ROOM A, AND ONLY 2 HERE IN ROOM B, YOU WILL PARTICIPATE IN 2 DECISION BLUES. FOR EACH, YOU WILL HAVE DIFFERENT COUNTERPARTS.

ARE THERE ANY QUESTIONS?

DECISION GREEN – ROOM B (DO NOT WRITE ON)

For this decision, you have been randomly matched with 3 counterparts in Room A. Your 3 counterparts will be asked to sit at a table, across from each other. You will not know who these persons are, and they will not know who you are, either during or after this decision.

Your ranking determines an amount of money to be divided among you and your 3 counterparts. For this decision, the amounts are indicated below:

RANK	AMOUNT
Group 1	$84
Group 2	$42

The monitor in this room will record your rank, your decision-maker number for this decision, and the amount to be divided, as determined by your skill, on 3 decision sheets. The total division amount determined by your rank will be evenly allocated between your 3 counterparts in Room A. For example, if your rank is Group 1, your 3 counterparts will each receive $28 to divide with you.

The monitor will then bring the sheets over to Room A, where they will be randomly distributed to your 3 counterparts. Each of your counterparts must then independently indicate on the decision sheet how much money each wishes to allocate to you, if any, and how much money each wishes to keep for himself/herself. The decision is totally up to each of them, and must be in increments of $.25. Each of your counterparts will be instructed NOT to discuss their decision with each other. When they are done, they will fold their decision sheet, and then wait for the monitor to come by and pick it up. The monitor will then bring the decision sheets over to this room, where they will be shown to you. The monitor will then walk by and collect the decision sheets. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

An Example

Suppose you earned a Group 1 rank, and that your decision-maker number for decision GREEN is 1035. This implies an amount to be divided of $84 between you and your 3 counterparts. Each counterpart will thus receive $28 to divide with you. The monitor in this room will record this information on 3 decision sheets as such, and then bring them over to Room A. Suppose one counterpart, who has a decision-maker number of 1036 for decision GREEN, wishes to allocate $3.25 to you and keep $24.75 for himself/herself. The counterpart will record these values as illustrated by the monitor, and then wait for the monitor to come by and collect his/her decision sheet. All three counterparts' decision sheets will then be brought back over to this room for you to look at. In this example, you would earn $3.25 plus whatever the other 2 counterparts decided to allocate to you. **This is only an example – the actual decision is totally up to each of your 3 counterparts.**

NOTE: AS THERE ARE 12 PERSONS IN ROOM A, AND ONLY 2 HERE IN ROOM B, YOU WILL PARTICIPATE IN 2 DECISION GREENS. FOR EACH, YOU WILL HAVE DIFFERENT COUNTERPARTS.

ARE THERE ANY QUESTIONS?

DECISION BROWN – ROOM B (DO NOT WRITE ON)

For this decision, you have been randomly matched with 6 counterparts in Room A. Your 6 counterparts will be asked to sit at a table, across from each other. You will not know who these persons are, and they will not know who you are, either during or after this decision.

Your ranking determines an amount of money to be divided among you and your 6 counterparts. For this decision, the amounts are indicated below:

RANK	AMOUNT
Group 1	$168
Group 2	$84

The monitor in this room will record your rank, your decision-maker number for this decision, and the amount to be divided, as determined by your skill, on a decision sheet. The total division amount determined by your rank will be evenly allocated between your 6 counterparts in Room A. For example, if your rank is Group 1, your 6 counterparts will each receive $28 to divide with you.

The monitor will then bring the sheet over to Room A, where it will be distributed to your 6 counterparts. The sheet will be placed on a clipboard in front of your 6 counterparts. This clipboard will remain stationary at all times.

Each of your counterparts must then independently indicate on the decision sheet how much money each wishes to allocate to you, if any, and how much money each wishes to keep for himself/herself. The decision is totally up to each of them, and must be in increments of $.25. Each of your counterparts will be instructed NOT to discuss their decision with each other. When they are done, they will leave the decision sheet on the clipboard and wait for the monitor to come by and pick it up. The monitor will then bring the decision sheet over to this room, where it will be shown to you. The monitor will then walk by and collect the decision sheet. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

An Example

Suppose you earned a Group 1 rank, and that your decision-maker number for decision BROWN is 1039. This implies an amount to be divided of $168 between you and your counterparts. Each counterpart will thus receive $28 to divide with you. The monitor in this room will record this information on a decision sheet as such, and then bring it over to Room A. Suppose one counterpart, who has a decision-maker number of 1040 for decision BROWN, wishes to allocate $1.50 to you and keep $26.50 for himself/herself. Another counterpart, who has a decision-maker number of 1041 for decision BROWN, wishes to allocate $9 to you and keep $19 for himself/herself. Another counterpart, who has a decision-maker number of 1042 for decision BROWN, wishes to allocate $14.25 to you and keep $13.75 for himself/herself. Another counterpart, who has a decision-maker number of 1043 for decision BROWN, wishes to allocate $17.50 to you and keep $10.50 for himself/herself. Another counterpart, who has a decision-maker number of 1044 for decision BROWN, wishes to allocate $19.25 to you and keep $8.75 for himself/herself. Another counterpart, who has a decision-maker number of 1045 for decision BROWN, wishes to allocate $12 to you and keep $16 for himself/herself. Your 6 counterparts will record these values as illustrated by the monitor, and then wait for the monitor to come by and collect the decision sheet. The decision sheet will then be brought back over to this room for you to look at. In this example, you would earn $1.50 + $9 + $14.25 + $17.50 + $19.25 + $12 = $73.50. **This is only an example – the actual decision is totally up to each of your 6 counterparts.**

ARE THERE ANY QUESTIONS?

DECISION ORANGE – ROOM B (DO NOT WRITE ON)

For this decision, you have been randomly matched with 6 counterparts in Room A. Your 6 counterparts will be asked to sit at a table, across from each other. You will not know who these persons are, and they will not know who you are, either during or after this decision.

Your ranking determines an amount of money to be divided among you and your 6 counterparts. For this decision, the amounts are indicated below:

RANK	AMOUNT
Group 1	$168
Group 2	$84

The monitor in this room will record your rank, your decision-maker number for this decision, and the amount to be divided, as determined by your skill, on 6 decision sheets. The total division amount determined by your rank will be evenly allocated between your 6 counterparts in Room A. For example, if your rank is Group 1, your 6 counterparts will each receive $28 to divide with you.

The monitor will then bring the sheets over to Room A, where they will be randomly distributed to your 6 counterparts. Each of your counterparts must then independently indicate on the decision sheet how much money each wishes to allocate to you, if any, and how much money each wishes to keep for himself/herself. The decision is totally up to each of them, and must be in increments of $.25. Each of your counterparts will be instructed NOT to discuss their decision with each other. When they are done, they will fold their decision sheet, and then wait for the monitor to come by and pick it up. The monitor will then bring the decision sheets over to this room, where they will be shown to you. The monitor will then walk by and collect the decision sheets. Finally, make sure to record your earnings for this decision on your record-keeping sheet.

An Example

Suppose you earned a Group 1 rank, and that your decision-maker number for decision ORANGE is 1046. This implies an amount to be divided of $168 between you and your 6 counterparts. Each counterpart will thus receive $28 to divide with you. The monitor in this room will record this information on 6 decision sheets as such, and then bring them over to Room A. Suppose one counterpart, who has a decision-maker number of 1047 for decision ORANGE, wishes to allocate $1.50 to you and keep $26.50 for himself/herself. The counterpart will record these values as illustrated by the monitor, and then wait for the monitor to come by and collect his/her decision sheet. All six counterparts' decision sheets will then be brought back over to this room for you to look at. In this example, you would earn $1.50 plus whatever the other 5 counterparts decided to allocate to you. **This is only an example – the actual decision is totally up to each of your 6 counterparts.**

ARE THERE ANY QUESTIONS?

DECISION SHEET – DECISION RED

Counterpart decision-maker number for decision RED: _____

Counterpart ranking (Group 1 highest, Group 2 lowest): Group 2__

Amount: __$14___

Decision-maker number for decision RED: _____

Amount for you to divide: __$14___

Offer to counterpart: _____

Amount you keep: _____

DECISION SHEET – DECISION YELLOW

Counterpart decision-maker number for decision YELLOW: _____

Counterpart ranking (Group 1 highest, Group 2 lowest): __Group 2____

Amount: __$28__ (total)

Amount: __$14__ (for each A to divide)

Decision-maker number for decision YELLOW: ___	Decision-maker number for decision YELLOW: _____
Amount for you to divide: __$14____	Amount for you to divide: __$14___
Offer to counterpart: _____	Offer to counterpart: _____
Amount you keep: _____	Amount you keep: _____

DECISION SHEET – DECISION BLACK

Counterpart decision-maker number for decision BLACK: _____

Counterpart ranking (Group 1 highest, Group 2 lowest): __Group 2___

Amount: __$28_____ (total)

Amount: __$14_____ (for each A to divide)

Decision-maker number for decision BLACK: _____

Amount for you to divide: __$14____

Offer to counterpart: _____

Amount you keep: _____

DECISION SHEET – DECISION BLUE

Counterpart decision-maker number for decision BLUE: _____

Counterpart ranking (Group 1 highest, Group 2 lowest): __Group 2_

Amount: __$42_____ (total)

Amount: __$14_____ (for each A to divide)

Decision-maker number for decision BLUE: _____	Decision-maker number for decision BLUE: _____
Amount for you to divide: __$14____	Amount for you to divide: __$14___
Offer to counterpart: _____	Offer to counterpart: _____
Amount you keep: _____	Amount you keep: _____

Decision-maker number for decision BLUE: _____	
Amount for you to divide: __$14____	
Offer to counterpart: _____	
Amount you keep: _____	

DECISION SHEET – DECISION GREEN

Counterpart decision-maker number for decision GREEN: _____

Counterpart ranking (Group 1 highest, Group 2 lowest): __Group 2___

Amount: __$42_____ (total)

Amount: __$14_____ (for each A to divide)

Decision-maker number for decision GREEN: _____

Amount for you to divide: __$14____

Offer to counterpart: _____

Amount you keep: _____

DECISION SHEET – DECISION ORANGE

Counterpart decision-maker number for decision ORANGE: _____

Counterpart ranking (Group 1 highest, Group 2 lowest): __Group 2____

Amount: __$84____ (total)

Amount: __$14_____ (for each A to divide)

Decision-maker number for decision ORANGE: _____

Amount for you to divide: __$14___

Offer to counterpart: _____

Amount you keep: _____

DECISION SHEET – DECISION BROWN

Counterpart decision-maker number for decision BROWN: _____

Counterpart ranking (Group 1 highest, Group 2 lowest): __Group 2___

Amount: __$84____ (total)

Amount: __$14_____ (for each A to divide)

Decision-maker number for decision BROWN: ____	Decision-maker number for decision BROWN: _____
Amount for you to divide: __$14____	Amount for you to divide: __$14__
Offer to counterpart: _____	Offer to counterpart: _____
Amount you keep: _____	Amount you keep: _____

Decision-maker number for decision BROWN: _____	Decision-maker number for decision BROWN: _____
Amount for you to divide: __$14____	Amount for you to divide: __$14__
Offer to counterpart: _____	Offer to counterpart: _____
Amount you keep: _____	Amount you keep: _____

Decision-maker number for decision BROWN: _____	Decision-maker number for decision BROWN: _____
Amount for you to divide: __$14____	Amount for you to divide: __$14__
Offer to counterpart: _____	Offer to counterpart: _____
Amount you keep: _____	Amount you keep: _____

POST-EXPERIMENT QUESTIONNAIRE

Subject Survey Sheet Player #_____

1. Age_____

2. What is your sex? (Circle one)

   Male Female

3. Have you ever been employed as a waiter or waitress? (Circle one)

   Yes No

4. Have any of your family or close friends ever been employed as a waiter or waitress? (Circle one)

   Yes No

5. What is your marital status? (Circle one)

   Single Married Divorced/Separated Widowed

6. Do you have children? (Circle one)

   Yes No

7. Do you regularly attend religious services? (Circle one)

   Yes No

8. In addition to school, do you (Circle one):

   Work at a full time job Work at a part time job Do not have a job

9. Which of the following categories best describes you? (Circle one)

   Asian-American/Oriental
   Black/African-American
   Middle Eastern
   Hispanic-Black/Spanish-speaking
   White/Caucasian
   Hispanic-White/Spanish-speaking white
   Native American/American Indian
   Other (Please specify):_____

10. Class (Circle one)

    Freshman Sophomore Junior Senior Graduate

11. Major (Circle one)

    Economics Other Business Psychology Science/Engineering

    Liberal Arts Other

12. How many Economics classes have you taken at the university level? (Circle one)

    None One Two Three Four Five Six More than Six

13. How many brothers and/or sisters do you have?_____

14. What is your place in the birth order (i.e. 1 = eldest, 2 = second born, 3 = third born, 4 = fourth born, etc.)?_____

15. What was your combined (verbal plus math) SAT score?_____

Appendix B

Copy of survey from Chapter 2.

THIS SHORT SURVEY IS FOR A Ph.D. DISSERTATION. THE INFORMATION YOU PROVIDE IS ANONYMOUS. THANK YOU FOR BOTH YOUR TIME AND COOPERATION.

1. How many people were at your table?_____

2. How many checks did your table have?_____

3. How many people, **including yourself**, did you pay for?_____

4. What was the total bill for the people, **including yourself**, who you paid for (**NOT INCLUDING TIP**)?_____

   Are any of the people you paid for going to give you money toward this amount *(circle one)*?

   Yes No

5. How much money, **in dollars and cents**, did you tip the server?_____

   Of the people you paid for, did anyone **other than you** leave a tip *(circle one)*?

   Yes No

6. Was the tip automatically added to your bill? *(circle one)*

   Yes No

   If you answered yes, what was the percent tip automatically added?_____

7. How did you pay for your bill? *(circle your response)*

   Cash Credit Card/ATM Card Check Other:_____

8. Did anyone at your table have:

Appetizers? (includes soups, salads) *(circle your response)*	**Yes No**
Entrees? *(circle your response)*	**Yes No**
Desserts? *(circle your response)*	**Yes No**
Alcohol? *(circle your response)*	**Yes No**

9. On a scale from 1 to 7, how would you rate the service you received from your waiter/waitress? *(circle your response)*

Poor						**Excellent**
1	**2**	**3**	**4**	**5**	**6**	**7**

10. What was your server's sex? **Male Female**

TURN OVER!! →

11. On a scale from 1 to 7, how would you rate the frequency with which you dine at this particular restaurant? *(circle your response)*

Least Frequent						**Most Frequent**
1	**2**	**3**	**4**	**5**	**6**	**7**

12. Have you ever been employed as a waiter or waitress? *(circle your response)* **Yes** **No**

13. For tax purposes, are you a dependent of your parents? *(circle your response)* **Yes** **No**

14. What is your sex? *(circle your response)* **Male** **Female**

15. What is your age?_____

16. What is your marital status? *(circle your response)*

Single **Married** **Divorced/Separated** **Widowed**

17. Do you regularly attend religious services? *(circle your response)* **Yes** **No**

18. What was your family's (all of the people in your household) approximate total income last year? *(circle your response)*

Less than $18,000

$18,000 - $33,000

$33,000 - $52,000

$52,000 - $82,000

More than $82,000

19. What is the highest degree you have obtained?_____

How many years of post-secondary (beyond high school) education have you completed?_____

20. What do you think the norm is regarding <u>percent tip</u> in a restaurant?_____

21. If you receive **terrible** service, what <u>percent tip</u> do you normally leave?_____

22. If you receive **outstanding** service, what <u>percent tip</u> do you normally leave?_____

23. If you receive **standard** service, what <u>percent tip</u> do you normally leave?_____

THANK YOU!! PLEASE FOLD AND PLACE IN BOX

Appendix C

Copy of survey from Chapter 3. In practice, the survey was formatted so as to occupy only two pages.

THIS SHORT SURVEY IS FOR A Ph.D. DISSERTATION. THE INFORMATION YOU PROVIDE IS ANONYMOUS. THANK YOU FOR BOTH YOUR TIME AND COOPERATION.

1. How many people were at your table?_____

2. How many checks did your table have?_____

3. How many people, **including yourself**, did you pay for?_____

4. What was the total bill for the people, **including yourself**, who you paid for (**NOT INCLUDING TIP**)?_____

   Are any of the people you paid for going to give you money toward this amount *(circle your response)*?

   Yes No

5. How much money, **in dollars and cents**, did you tip the server?_____

   Of the people you paid for, did anyone **other than you** leave a tip *(circle your response)*?

   Yes No

6. Was the tip automatically added to your bill? *(circle your response)*

   Yes No

   If you answered yes, what was the percent tip automatically added?_____

7. How did you pay for your bill? *(circle your response)*

   Cash Credit Card ATM Card Check Other:_____

   If you paid by either credit or ATM card, did you leave your tip on the card? *(circle one)* **Yes No**

8. Did anyone whom you paid for, **including yourself**, have:

Appetizers? (includes soups, salads) *(circle your response)*	**Yes No**
Entrees? *(circle your response)*	**Yes No**
Desserts? *(circle your response)*	**Yes No**
Alcohol? *(circle your response)*	**Yes No**

9. On a scale from 1 to 7, how would you rate the service you received from your waiter/waitress? *(circle your response)*

Poor						**Excellent**
1	**2**	**3**	**4**	**5**	**6**	**7**

10. What was your server's sex? (*circle your response)* **Male Female**

    To the best of your knowledge, your server was: *(circle your response)* **White Black Other**

11. On a scale from 1 to 5, how would you rate your server's attractiveness? *(circle your response)*

	Below		**Above**	
Homely	**Average**	**Average**	**Average**	**Strikingly Handsome/Beautiful**
1	**2**	**3**	**4**	**5**

TURN OVER→ TURN OVER→

12. On a scale from 1 to 5, how would you rate your server's weight? *(circle your response)*

Severely Underweight	Underweight	Average	Overweight	Severely Overweight
1	2	3	4	5

13. On a scale from 1 to 7, how would you rate the frequency with which you dine at this particular restaurant? *(circle your response)*

Least Frequent						Most Frequent
1	2	3	4	5	6	7

14. Have you ever been employed as a waiter or waitress? *(circle your response)* **Yes** **No**

    Have any of your close friends or family ever been employed as a waiter or waitress? *(circle your response)*

    Yes **No**

15. For tax purposes, are you a dependent of your parents? *(circle your response)* **Yes** **No**

16. What is your sex? *(circle your response)* **Male** **Female**

17. Which of the following categories best describes you? *(check appropriate box)*

    Black/African-American **White/Caucasian** **Asian-American/Oriental** **Middle Eastern**

    Hispanic-Black/Spanish-Speaking Black **Hispanic-White/Spanish-Speaking White**

    Native American/American Indian **Other (Please Specify):_____**

18. What is your age?_____

19. What is your marital status? *(circle your response)*

    Single **Married** **Divorced/Separated** **Widowed**

20. Do you regularly attend religious services? *(circle your response)* **Yes** **No**

21. What was your family's (all of the people in your household) approximate total income last year? *(circle your response)*

    Less Than $18,000 **$18,000 - $33,000** **$33,000 - $52,000** **$52,000 - $82,000**

    More Than $82,000

22. What is the highest level of education that you have completed? *(circle your response)*

    Some High School **Completed High School** **Some College** **Bachelor's Degree**

    Graduate/Professional Degree **Other (Please Specify):_____**

23. On a scale from 1 to 5, how would you rate your attractiveness? *(circle your response)*

Homely	Below Average	Average	Above Average	Strikingly Handsome/Beautiful
1	2	3	4	5

24. What do you think the norm is regarding percent tip in a restaurant? *(do not give a range)*_____

THANK YOU!! PLEASE FOLD AND PLACE IN BOX

Vita

Matt Parrett was born on August 23, 1975 at Offutt Air Force Base in Bellevue, Nebraska. He moved to Richmond, Virginia in September 1979, where he graduated from J.R. Tucker High School in June 1993. Matt entered Mary Washington College in August 1993, graduating with a B.A. in Economics in May 1998. In August 1998, he entered Virginia Polytechnic Institute and State University, where he earned the M.A. in Economics in May 2000, before receiving his Ph.D. in December 2003.