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**The Overburdened Consumer:
The Economics of Technological Change in the Service
Sector**

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This paper builds upon the insight of a number of dissenting economists who have argued that the conventional understanding of technological change is incomplete and therefore inadequate to a full and accurate understanding of this process. Specifically, the idea that technological change is "productivity enhancing" and otherwise benign with regard to employment levels, the character of the workplace, and the quality of life has not gone unchallenged [Braverman 1974; Edwards 1979; Lazonick 1979; Marglin 1974; Woirol 1996]. This paper will extend these earlier criticisms through an examination of the economics of technological changes that are particular to the service sector of the economy.

Specifically, service providers can realize increased productivity by modifying or changing the expectations, behavior, and work effort of their customers. While such changes are often innocuous, and usually involve only a marginal inconvenience to the customer, this is not always the case. In many instances, the increased emphasis on "self-service" can impose a service delivery technology that involves a substantial, irksome, or inconvenient transfer of effort from the provider to the customer. In a word, the modern consumer is the subject of an increasingly intensive speedup. This has important consequences for the quality of life experienced by individuals otherwise presumed to be the beneficiaries of an affluent society.

In keeping with the small existent literature on this phenomena, such a shifting of responsibilities and effort will be labeled a "work transfer."¹ However, to grasp the economics of this phenomena, we must first develop an understanding of how consumers allocate their time. In particular, we need to re-examine our understanding of "leisure time" as it relates to the consumption process. Once this has been done, we can address the issues posed by technological change in the service economy.

The Temporal Aspects of Consumption

Within the neoclassical theory of economics, the maximization of utility is the impetus and endpoint of all economic relations. Since the degree of utility cannot be directly observed, the level of consumption typically serves as its proxy. Within this tradition, the specifics of consumption are taken as a datum, and for this reason, not considered worthy of further analysis.

In a number of ways, it is remarkable that the dominant theory of economics has devoted so little effort to the economics of consumption. There are a variety of reasons for this lapse, but one of them seems to be its commitment to the model of "rational economic man," whose attitudes and behaviors are not subject to study since this abstract person's behavior forms a significant component of what modern economics takes to be

¹To my knowledge, this term was first employed by Nona Glazer [1993]. The argument in her book is built around two cases studies, both of which are suggestive and interesting. However, since her work is sociological in character, the implications of this phenomena for economic theory, specifically the theory of consumption, are not fully explored. This broader examination is the task of the present paper.

axiomatic. Unfortunately, this approach pre-commits the profession to an idiosyncratic understanding of consumer behavior, inducing a professional blindness to a number of important phenomena and trends.

Professional indifference to the theory of consumption is of relatively recent origin. Many researchers within the Institutionalist tradition were careful students of consumption trends [Galbraith 1958; Homan 1931; Hoyt 1928; Kyrk 1923; Mitchell 1912; Veblen 1934; Waite 1928]. This project was, as might be expected, consistent with the inductive approach that Institutionalists maintained with regard to economic method. The modern positivist tradition does not share either the approach or the interest of this early work. Partial summaries of the this rich, if neglected, literature have appeared in recent issues of this *Journal* [Akerman 1997; Mason 1995].

In addition to the work of the Institutionalists, several decades ago some prominent theorists within the neoclassical tradition began an examination of the temporal aspects of consumption. Jacob Mincer [1963], Gary Becker [1965] and Staffan Linder [1970] stepped back from an Arrow-Debreu world in order to explore the idea that the organization of consumption required time -- time that was presumed to be scarce. The premise of time-scarcity implied that time featured an opportunity cost and hence an economic value. It is my contention that this overlooked research program has important implications which can be retrieved and incorporated into a study of the relationship between

technological change, service sector productivity, and consumer satisfaction.

The Economics of Time

It was Jacob Mincer who initially argued for the theoretical significance of the fact that organizing and managing our consumption involves substantial quantities of time. Moreover, this time featured a subjectively valued opportunity cost that modified any given consumer's perception of the relative value of goods [Mincer, 1963]. Drawing inspiration from Mincer, Staffan Linder [1970] argued that important information was lost when economists assumed, in the spirit of Lionel Robbins [1930], that our time was divided up into the exclusive categories of Labor (Work-for-Pay) and Leisure. Linder [1970] suggested that an individual's total allotment of time be thought of as divided into four distinct segments. Two of his categories are especially important for our argument. "Work" is defined in its conventional sense of paid labor, (throughout this essay I will refer to this category as "wage work"). In addition, Linder proposed a category that he termed "Personal Work" [Linder 1970, ch. 1]. Personal work refers to the effort that we expend in maintaining our ourselves and our belongings in order to sustain or expand our standard of living.² Like wage work, the amount of personal work

²Linder's four categories of time were: 1) Work 2) Personal Work 3) Consumption Time and 4) Idleness. Consumption Time is a necessary input to the consumption of goods. Viewed as separate from time spent maintaining our consumer goods, consumption time represents the actual hours we spend playing chess or enjoying a day at the beach. One might say that consumption time and consumer goods jointly "produce" utility. To Linder idleness, the final

undertaken is, to an important degree, endogenous. Its size is subject to change as incomes, technology, and preferences change over time. Moreover, within wide boundaries wage work, personal work, and consumption time can be "traded off" by a rational agent.

Linder would agree that up to some point, personal work can embody a degree of positive utility. We know, for instance that many people derive pleasure from walking their dogs and washing their cars. In addition, there are some varieties of personal work that Thorstein Veblen would categorize as "conspicuous leisure." Conspicuous leisure consists of tasks that are of no social or pecuniary purpose. Examples include "the knowledge of the dead languages and the occult sciences" and "the latest proprieties of dress, furniture, and equipage" [Veblen 1934, 45]. However, neither of these observations presents a debilitating criticism of Linder's category of personal work. After all, economists have long been aware that there can be, and often is, a consumption element involved in wage work. Prestige, companionship, political importance, and the social necessity of certain jobs can add to the value of a paid task in ways that are not directly captured by the wage.

If we acknowledge that organizing our consumption requires personal work, and further, allow that quality consumption may require a good deal of time spent in personal work, then the fact of our finite existence implies that the ownership of an increased

category, is just that -- nothing. It is neither work (of any variety) nor play. It is typically associated with some sort of calamity - either social or individual, such as homelessness or depression.

quantity of physical objects may require ever-increasing amounts of time for their care and maintenance. This observation forms the basis of what Linder referred to as the "Harried Leisure Class."

Here is the catch: if goods require time to be selected, purchased, transported, sorted, repaired, maintained, and cared for, then these efforts involve opportunity costs that are, according to Mincer [1963], a component of the price of these goods from the perspective of the consumer. In this sense, the actual price of any particular good, from the subjective estimation of any particular purchaser, is as follows:

$$P_c = P_m + P_{pw} \quad \text{where:}$$

P_c = total price as subjectively perceived by the consumer
(hereafter consumer price)

P_m = market price charged by the providing firm

P_{pw} = the value of the personal work needed to locate,
purchase, transport and maintain the commodity
(subjectively assessed and evaluated).

Notice that Mincer's analysis explicitly involves the idea that the demand price of any given commodity is typically greater than its market price. Moreover, there is a difference between the market price that a firm receives for its goods and what its offerings "cost" the consumer. This overlooked contribution by Mincer has profound implications for the theory of demand:

In a more general sense the point to be emphasized is that the final price to the consumer is not the selling price, say at retail as distinguished from wholesale or from manufacturer's price. There is also a "value added" by the consumer at the final stage of consumption. This "value added," creates differences in [the] effective prices of the "same commodity" among different consumers. It also creates differences between prices as quoted by sellers and as viewed by buyers, yet the latter determine the demand curves facing the industry and the firm [Mincer 1963, 82].

As services are offered at a wide range of prices, reliability, and quality, the theory of technological change and productivity within the service sector can be enriched once we allow for a more complex understanding of how people spend their time when not actually working for wages. As Linder observed, and as American homemakers have always known, not to work is not the same thing as enjoying leisure [Cowen 1983; Friedan 1963, chs. 1, 2, & 10; Galbraith 1973, ch. 4]. Other increasingly busy Americans are beginning to appreciate this reality.

The Choice of Technology and the Rational Firm

In deciding upon a delivery technology the pressing question, from the point of view of the service provider, is the extent that a rational profit-seeking firm should substitute between its market price and the amount of personal work imposed upon the consumer. Clearly this work transfer is limited by the consumer's ability and willingness to withdraw from the proposed exchange. To the extent that substitutions between market price and personal

work can be made by the producer, this decision becomes a tool of profit maximization. All things being equal, we should expect firms to move towards an "optimal" degree of customer service. The inverse of this statement is that firms impose a deliberate quantity of "personal work" upon their customers.

The business literature on service sector productivity suggests that the amount of personal work that can be imposed on customers is not fixed. Depending on the business and marketing strategy pursued by the firm, a greater or lesser amount of personal work can be shifted to consumers [Lovelock and Young 1979]. Once we account for the work transfer as a viable strategy, we can see that firms face a three-way cost minimization problem between: 1) the direct costs in providing the specific service, 2) the quantity of work transferred, and 3) the amount of marketing that supports the work transfer. We can assume that firms will choose the lowest cost option that is consistent with its growth and profit objectives.

As an example of these economic principles, suppose the "representative consumer" places a value of zero on the time they devote to personal work. In such a case we can deduce that the firm's cost-minimizing strategy will result in the provision of commodities that may be difficult to locate, transport and maintain. The reason is that "customer service" will play no role in the firm's strategy. In this scenario, price competition between firms would ensure that the market price would be very low -- indeed at its minimum point. Given the structure of consumer

preferences, this low market price would presumably increase the demand for the product in question.

However, experience indicates that the above scenario is not the typical case. People do value their time, and perceive a cost to personal work. Indeed, this intuition is confirmed by the industrial organization and marketing literature which argues that firms often compete on the basis of location, quality, and service rather than on price.

Of particular interest are those cases in which the consumer faces poor economic circumstances, pervasive local monopoly (as in rural areas), and/or a lack of choice that is imposed by their specific needs [Prasch 1995b]. In such cases, we can surmise that firms are able to exert their market power in the form of relatively expensive goods that require a substantial component of personal work.³ Moreover, in the service economy, where the consumer must typically be present for the service to be performed, personal work can emerge as an important component of the final "price" of any given commodity.

³In this paper I will refer to private firms as being the agents who introduce some sort of technical change. However it is clear that a government office could be the service provider in question. Indeed, with the advent of Vice-President Gore's celebrated efforts at "Reinventing Government" we now have numerous examples of work transfers within the government sector. Since in many cases the government is the monopoly provider of some essential service, say citizenship forms or unemployment compensation checks, such work transfers can be onerous, irksome and unavoidable. These work transfers are particularly noticed and commented upon when they fall upon the upper classes, which are less accustomed to such treatment. Examples include the Department of Motor Vehicles or the Passport Office. However, it is my intent to explore these dynamics within the private, market-based sector since this phenomena is partially hidden for reasons related to the outlook embodied in the mainstream of economic theory. There is also a need to confront the ideological issue observed by Thurman Arnold when he noted that for most Americans, "...taxation by industrial organizations is a pleasanter way of paying tribute than taxation by government" [Arnold 1937, 263].

Technology and the Profit Motive in the Service Sector

It is generally agreed that the specific technology that firms adopt is closely related to the drive for market share and/or enhanced profits. But what of technological change within the service economy? Services are somewhat unique in the sense that more often than not, the consumer is an important part of the actual service process. One typically has to be present to get one's teeth examined, get a haircut, or have a pet shampooed, etc. Sometimes the customer is not the object of the work effort, but must be available for the service to occur, i.e., the plumber will call next Tuesday, or the refrigerator will be delivered before noon, etc. Only in some cases, such as lawn maintenance, is it possible to deliver a service without directly involving the customer.

An analysis of the "service economy," in light of the above discussion of personal work, allows us to identify a new realm for technical change that has been inadequately appreciated by economic theorists. This is the idea that a profit-maximizing firm can pursue a cost advantage, and increased profits, through a particular variety of technological change: specifically, it can adopt a technology that encourages the customer to perform all, or a substantial proportion, of the service task in question. Business and marketing experts have been aware of this possibility for some time:

In services...consumers are involved in the production process. Consequently, they are also an input to production. The thoughtful service manager should ask: How can our customers become more productive inputs to the creation of the services that we produce for them? And what marketing strategies can we use to influence their behavior? [Lovelock and Young 1979, 175].

This is an interesting and provocative point of view. In its extreme form the notion behind it is obvious, perhaps so obvious that it risks being missed: if you do something for yourself and then pay someone else anyway, an opportunity for pure profit in the form of a transfer exists. Notice, however, that the emphasis in the above quotation is on marketing. This is not misplaced since firms wish for more than a simple modification of the behavior of their customers. Specifically, firms seek a reorientation of consumer attitudes towards a new mode of service delivery.

An example may aid to illustrate this point. Until the late 1970s gasoline was typically provided in a fashion that we would designate as "full service" today. The usual approach was to have an attendant check the oil, pump the gasoline, and wash the windshield of the automobile while the customer waited in the comfort of their car (unless they chose to use the ever-available restroom). Today, with the exception of the state of New Jersey, "self-service" is the norm. Many "service stations" provide no service at all -- no restroom and no attendant, only gas pumps and a single cashier who is imprisoned for the duration of their shift in a small booth at the center of the plaza. Some gas stations offer the full service option for a higher price, but more often

than not the driver must specifically request that the oil be checked or other specific services be provided or performed.

The modern gas station is a useful example of a work transfer because it is the consumer who must typically perform any "service" that actually occurs. In many cases the "service station" limits its effort to the provision of the material inputs that are required for the service to take place. In addition, this example captures the wide range of values that different customers may assign to the price of the personal work (P_{pw}) that they must perform. Some people do not mind the additional effort, they may even appreciate the convenience of not waiting for an underpaid, and potentially uninspired, employee to perform their assigned tasks. At the other extreme, society's double-standard vis-a-vis the appearance of women, especially women who are executives or professionals, indicates that the risk of minor gasoline spills can be a daunting proposition for some customers. In such a case, "self-service" is a significant burden independently of tastes and other subjective factors.

A Taxonomy of Work Transfers

When technical change involves a work transfer, either in whole or in part, the innovating firm will typically market the result as being either more "convenient," or as resulting in "savings" for the consumer. Hence marketing, working in concert with a culture that is extraordinarily supportive of technical change, is an important backdrop for the successful accomplishment

of a work transfer.⁴ In a market that features perfect competition, and therefore a high degree of consumer sovereignty, logic indicates that either convenience and/or price savings for the consumer would be the expected result of technological change. This can be demonstrated through the first principles of economics. However, with imperfect information, time constraints, and imperfect markets it is not at all clear that the final result is unambiguously beneficial to the interests of consumers. In such cases firms might aggressively pursue work transfers as a useful strategy to enhance profits.

With the above issues in mind, it is possible for us to look at work transfers as having a variety of outcomes depending upon the mix of the following variables: profits, the level of personal work (P_{pw}), and the market price (P_m). Any expected outcome would depend on the responses of competitors and consumers to the specific work transfer that is taking place. In this sense, consumers respond to a work transfer in virtually the same fashion as they would to a sales tax. In other words, should the market price of the service remain the same, the expected size of the response to an increased work transfer would depend on what could be termed the "Personal Work Elasticity of Demand" ($\% \Delta Q / \% \Delta P_{pw}$). For instance, if the inconvenience due to the work transfer is small, and the cost of changing providers is substantial, then we can expect the provider to retain the bulk of the savings due to the new service technology as additions to profit.

⁴Howard Segal [1994, xi] has observed the importance of the "doctrine of the technological imperative" to modern American culture. The play on Immanuel Kant is most appropriate in this context.

Conversely, a substantial and/or irksome transfer of work, combined with a small cost to changing providers, would result in the erosion of a firm's customer base. In this case, the firm engaging in the work transfer would have to either reverse the work transfer or pass along the entire savings to its customers. The amount of savings passed along would depend upon the typical consumer's preference for income as opposed to personal work. Casual observation indicates that many consumers undervalue their own time and therefore tend to prefer lower prices to additional leisure time. Given this characteristic, and a world in which suppliers respond to the preferences of a mass market, we can expect, *ceteris paribus*, that a time-intensive technology, one that features an important component of personal work, will emerge as the market standard.

With these considerations in mind, we can narrow the range of expected outcomes. To begin, we can reasonably assume that any change in service technology voluntarily engaged in by firms will not lower profits. In the absence of mistakes, no rational firm would impose additional costs upon itself if it were unprofitable to do so. Exogenous pressures have forced such strategies upon firms as a best response to innovative competitors, but that is a separate issue.

The case where profits remain the same and the entire savings are passed along is equally straight-forward. With no advantage to the firm from engaging in this change, they would presumably have no motive other than the exogenous dictates of the market to force them to pursue such a change. This is the instance of pure

consumer sovereignty -- the vision of technical change that is described in the textbooks. In this case, should consumers demand a certain style of service, competitive firms must adapt or leave the market. The end result remains zero economic profits. While it is clear that this is a distinct possibility, and it is possible to conceive of several instances that approximate this outcome, it remains a singular case. However, since non-market phenomena as trivial as location and "shoe leather costs," are both market imperfections, it would be inaccurate to overly generalize from the pure competitive case.

Two cases emerge as the typical situations faced by actual firms. Provided that the consumer is not subjected to an overwhelming imposition, the firm, if it is sensitive to consumer concerns about convenience and time, will be able to construct a marketing campaign that can "pitch" the change as a "win-win" innovation. To succeed, management must emphasize that the new technology will do more than simply lower the firm's costs. The firm must argue that the change will lower the price of the goods (whether it is adequate compensation for the work transfer is not an issue typically explored in the marketing of new delivery technologies). Specific circumstances and the consequent elasticities will determine how much, and under what conditions, the consumer will enjoy any of these savings.

On the other hand, we can conceive of examples in which firms are able to engage in a work transfer and fully appropriate the savings. Cases of monopoly and small, even infinitesimal, transfers come immediately to mind. For example, consumers are

typically insensitive to changes in the prices of goods that command a very small portion of their budget to begin with. One might suppose that similar tendencies apply to their "time budget." Examples include having customers fill out their own withdrawal and deposit slips prior to approaching a bank cashier, or write their account number on their monthly credit card payments. While it is conceivable that some people changed banks or dropped credit cards in order to spare themselves the effort involved in performing these tasks, it is hard to imagine that this was a widespread response.

A virtually pure work transfer has been enacted by a Poughkeepsie supermarket. This store has installed a lock and chain device on their shopping carts that opens only after a quarter is deposited by the customer. The customer has to return the cart to a stand at the front of the store in order to retrieve their quarter. The mechanism is entirely automatic. This technological change, while clearly reducing the store's labor costs, is a pure work transfer in that no new product or service is created.⁵ Someone is always going to have to walk carts to the front of the store -- the question is who? Since we can assume that the needs and dispositions of a store's customers vary widely, it is not at all clear that they, as a group, have a comparative advantage in walking carts. They could, of course, choose to abandon their quarter, leaving someone else with a modest arbitrage opportunity. In this case the work transfer is

⁵There is some deadweight loss due to the new technology in the event that a customer does not have a quarter, and is forced to enter the store in search of change.

transformed, at the customer's discretion, into a cart rental fee. In the cart example, although work has been transferred, we must presume that the level of inconvenience is not substantial enough to induce a fall in demand amongst the customer base. Indeed, as expectations are slowly reconstituted, the store may lay the ground for another transfer of work to its customers. However, the store must be cautious. At any given time, consumer perceptions and expectations cannot be too far apart, least resistance be induced on the part of consumers [Lovelock and Young 1979]. However, this would be an unusual result since shoe-leather costs, and the transactions costs associated with collective action, indicate that customers are unlikely to mount an effective response to this inconvenience.

Another case is one that is more in keeping with the conventional understanding of technological change within the service economy. Examples include the introduction of the Zip Code, or direct long-distance dialing on the telephone. While the customer must be able to access, absorb, and recall more knowledge in order to employ the correct Zip Codes, or accurately dial long-distance, the savings to the post office and the phone company are enormous, and it is likely that a substantial portion of this savings has been passed along to consumers. One could say the same for ATM machines, and for having grocery stores change to a system wherein customers walk past the shelves in search of items

rather than present a list at the front of the store and wait for a clerk to gather the desired items.⁶

Finally, in the event of widespread work transfers within a given industry, rational consumers will come to demand lower market prices as "insurance" against the fact that so many "opportunistic" firms exist. Firms, even non-opportunistic firms, will be offered lower market prices due to the "statistical discrimination" practiced by wary consumers with an accurate, if only aggregate, understanding of the service norms of a given industry. In the absence of credible commitments, non-opportunistic firms may fail to attract adequate consumers who can only observe relative market prices and must presume that a work transfer will be forthcoming from all providers. Under these conditions a competitive marketplace will ensure that the standard of service will fall to that of the most irresponsible firm. Gresham's Law can be presumed to be the rule in a competitive service industry without credible commitments and incomplete information about the unique qualities of the various providers.

⁶It is interesting that stores specializing in automotive parts are still organized on the older principle. One typically enters the store and asks the clerk for the specific part or parts that will be retrieved for you as you wait in the front area. While most grocery stores once operated this way, few still do. Even small stores in rural areas now operate on the self-service principle, perhaps because this system is now considered to be the norm for the acquisition of food items.

***The Incidence of the Work Transfer When Time is
Differentially Valued***

Those who have studied work transfers have observed that the extent, frequency, and incidence of this process depends on the implicit value attributed to the opportunity cost of time. Problems emerge when one group makes this valuation and another bears the consequences of the choice. In particular, we can expect that there will be a substantial transfer of the work effort towards the consumer if there exists a group of people, such as women, whose labor time is generally thought to be of little value [Hartmann 1974; Glazer 1993]. The traditional homemaker was subjected to just this predicament. Indeed, the tendency to presume that her time was of a low implicit value was accentuated when a sexist society came to think of her as enjoying leisure despite the myriad of obligations that can accrue when one is raising children in the isolation of a suburban home under contemporary social conditions [Cowen 1983; Galbraith 1973, ch. 4; Bergmann 1986, ch. 9].

More generally, pervasive sexism led to an undervaluation of what society considers to be "women's work." As a result, an increased burden of personal work could be passed along to women without necessarily inducing a corresponding demand to pass along the resultant cost savings. Heidi Hartmann and Nona Glazer point to the laundry, retail, and health care industries as important examples of work transfers in the twentieth century [Hartmann 1974, ch. 6; Glazer 1993]. Arguably the notorious unreliability

of plumbers and other repairmen, who require access to the home, was induced by the presumption that the "lady of the house" would not be substantially inconvenienced. Since a sexist society values a homemaker's time at close to zero, no accurate arrival time needs to be provided. In such a case the providing firm, say the plumber, can pursue a profit-maximizing strategy that minimizes the market price of the service, while paying minimal attention to the quantity or value of the "personal work" involved or the inconvenience experienced by customers. This strategy would be optimal if it were aligned with the preferences of a traditional husband who was primarily concerned with the market price (P_{pm}) for plumbing services even if this "bargain" price generated a substantially higher consumer price (P_c) to the couple, since the burden of the personal work (P_{pw}) is primarily borne by the homemaker and not experienced by the individual negotiating the initial service contract. Now that a majority of families have two full-time adults in the workforce, it will be interesting to see if providers of home services will be inclined to use reliable scheduling as a competitive weapon. The reversal of this work transfer implies the need for a larger staff, and therefore a higher market price (but potentially a lower consumer price) for services that must be provided in the home.

To the extent that a work transfer can be shrouded in the belief that it represents a more "nurturing" or "feminine" way to perform a task or service, the service provider may enjoy a source of cost savings that would not necessarily encounter resistance from consumers who are -- at some level -- willing or unwilling

captives of the ideological structures of a sexist society [Bergmann 1986, ch. 9; Galbraith 1973, chs. 4 & 23; Schor 1992, ch. 4; Friedan 1963, chs. 1, 2, & 10]. Some of the observed decline in leisure, and the frustrations experienced by many of the women who were "caught" in traditional roles, can be attributed to the manner in which services were delivered to the household, and to the norms and standards that were upheld to ensure that a labor-intensive delivery technology would emerge as the norm. Indeed, I would suggest that the trend towards suburbanization in the post-war period was heavily dependent upon the existence of a class of persons who could be forced, or induced, to accept substantial work transfers.

Conclusion

None of the above refutes our conventional understanding of technological change. In many cases, the process still works in the way that it has been depicted in the economics literature. What is in question is the absolute reign of consumer sovereignty within economic theory. In some cases consumers can "vote with their feet" and walk away from a particular service provider. More often consumers must accept an incremental work transfer and lose a fraction of their leisure time. With numerous and repeated purchases these small, even infinitesimal, sacrifices contribute to a diminished quality of life. Not having a single provider to confront in a sweeping negotiation, the consumer must accept a

diminished quality of life since the transactions costs involved in renegotiating every service contract is simply prohibitive.

It remains true that technological change is primarily motivated by the profitability and market share of the firm engaging in an innovation. However, this paper presents several reasons to conclude that such changes should not automatically be perceived to be "efficiency-enhancing." When analyzing productivity-enhancing innovations in the service economy, we must examine each instance on an individual basis to know if overall efficiency has risen.

Since profitability is the firm's objective, we know that work transfers involve "productivity gains" through cost savings to firms. As mentioned, the professional business literature has long observed and commented upon the possibilities in this area. Over time, the consumer has been taking on an increased amount of the labor that is involved in the delivery of services. Examples range from the "phone trees"⁷ that have replaced secretaries in many offices, direct dialing, Zip Codes, laundry, gasoline stations, ATMs, nursing services, the filing of insurance claims, grocery and clothes shopping. In many modern venues, it is the consumer who must procure and assemble the goods, or at least modify their expectations and needs to fit the technology of the service provider.

⁷It will be interesting to see how this particular work transfer will evolve over time. What makes this transfer unique is that there is an explicit cost, namely the phone bill of the caller, that is added to the inconvenience of being forced to maneuver through an often Byzantine phone tree. In such a case even the customer who places no value on their time may find themselves confronted by a higher phone bill which may be a cause of dismay. In such cases the firm has transferred both work and explicit costs to whomever is calling.

To the extent that pervasive imperfect competition indicates that market power resides with the provider, or to the extent that a subgroup of the population is powerless as a result of their economic or social status, less of the savings from the work transfer can be expected to be passed along. In such cases, modern technology and the profit motive combine to impose a "speed up" of the consumer. Indeed, the consumer, to the extent that he or she is not sovereign, has been subject to a "speed up" from the service sector over much of the post-war period. Poor people and women have been particularly subject to work transfers since they have had less direct control over their time and consumption choices [Glazer 1993; Hartmann 1974]. Their lack of market power should, *ceteris paribus*, result in the experience of worse service in general, and therefore a higher consumer price (P_c), even when the market price (P_m) is identical for all customers [Prasch 1995b].

Finally, in a climate where the time-squeeze is increasingly onerous [Schor 1992], and where women are less subject to overt sexism, and are more likely to be in the workforce, the work-transfer may become an increasingly problematic way to enhance the profitability of service firms. On the other hand, in an affluent society each of us enters into more and more transactions over a given year. These transactions are often complex and the myriad of contingencies are generally unknown [Mitchell 1912]. This increased complexity should work to the advantage of service firms that wish to engage in work transfers. Given these opposite tendencies, it is difficult to predict whether the aggregate

quantity of work transfers will rise or fall over the near future. However, it is safe to assume that with increased disparities of income distribution, and the decline in public services, the incidence of work transfers will continue to fall most heavily on those who can least sustain them: the poor, immigrants, and other marginalized groups.⁸

Postscript:

The Extent of the Work Transfer -- Problems in Measurement

Most Americans have experienced numerous work transfers as part of the self-service drive that has permeated this society over the past several decades. However, to establish the existence of a phenomena is not the same thing as assuring its potential for direct observation or measurement. Nevertheless, we do know that non-empirical phenomena can exist. Even within economics, a field that arguably suffers from a naive over-commitment to empirical methods, there is an important, if neglected, literature that explores the difficulties inherent in measuring such abstractions as "utility," the "social welfare function," or the "average level of prices." There is no reason to suppose that a quantitative assessment of the size of the work

⁸I am aware that many economists will be inclined to argue that it is efficient if work transfers fall disproportionately on the poor since their lower incomes reveals a lower "opportunity cost" of their time. This comparison is flawed since the wealthy can afford a maid or a personal secretary to manage many of the inconveniences due to work transfers. Moreover, as the Postscript to this paper argues, there are several reasons to doubt that the wage is an accurate measure of opportunity cost. In addition, market power imposes a differential between the market wage and the social product of a person's work effort. This fact alone indicates that drawing efficiency conclusions from the observed wage is problematic.

transfer, or its change over time, will be easier, or more *ad hoc* than any of these other abstractions.

Indeed, the difficulties experienced in estimating the size of the work transfer are directly analogous to the problems that emerge in the measurement of price. The core issue is the fact that the price received by the seller (P_m), and that perceived by the buyer (P_c), can be very different when a work transfer is taking place. Moreover, the dimensions of this difference may not be exactly known at the time of purchase, although an intuition or a hunch may be available. Even if these issues were resolved, the measurement and aggregation of these disparate prices remains problematic for many of the same reasons that indices of aggregate prices remain problematic [Morgenstern 1953; Prasch 1995a]. The principle problems have to do with the measurement of the value of time, the introduction of new products, and the assigning of appropriate weights to various goods in the aggregate index.

Differences in tastes, time-preferences, opportunity costs, and schedules indicate a second measurement dilemma. As a result, assessing the value, or even the existence of, a work transfer may depend on the subjective assessment of numerous consumers. Indeed, Mincer [1963], takes some pains to argue that the valuation of personal work is explicitly dependent upon the opportunity cost of time. Following conventional standards of measurement, Mincer takes this cost to be equal to the individual's wage. While this may represent our best first approximation to the value of someone's time, there are several problems in applying this convention. In the case of an

involuntary imposition of personal work, we must conclude that the wage is less than the value of time as subjectively assessed by any given consumer. How much less cannot be discerned by the facts of the transaction alone. Additional problems are caused by the fact that people do not place a constant weight on the implicit value of their time. The shadow price of time varies depending upon what part of the week it occurs, or if the time in question occurs during a vacation, etc. Moreover, people with a low market wage, such as a homemaker or retiree, may in fact have a modest income by choice since they place a high value on non-market activities or the non-market aspects of the variety of work that they do [Shaw 1992].

Since wage rates and time preferences vary across the population the subjective nature of the value of time, and hence the implicit cost of the work transfer, presents a formidable challenge to any concrete effort to measure the size of the aggregate work transfer. Indeed, it may be an insurmountable problem. In addition, sorting "voluntary" from "involuntary" work transfers is problematic given that changing norms, consumer expectations, advertising expenditures, and social status often modify this distinction.

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