

The Political Economy of Price Measurement:
The NRC Report “At What Price” and Beyond¹

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I. Introduction

The recent report of the committee of experts empaneled the National Research Council (NRC), At What Price, is the latest in a series of evaluations of the Consumer Price Index (CPI) program that includes the well-known reports of the Stigler committee of 1961 and the Boskin commission of 1996. At What Price (AWP) provides a comprehensive overview of the Consumer Price Index (CPI) program, and lays out the basic issues and points of dispute. It also offers a series of explicit recommendations for further research on the CPI. These are important additions to the large literature on price measurement, but the most significant intellectual contribution lies not in the report’s additions to the field but in its implicit challenge to the current direction of price research.

The CPI program has evolved over the decades from its initial objective of measuring the cost of purchasing the same market basket of goods over time (termed the “cost of goods index” or “COGI”) to a paradigm based on the “true” cost-of-living (COLI) index of utility theory. This

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historical evolution is well-documented by Reinsdorf and Triplett (2005), who also mount a spirited defense of the COLI approach. This view undoubtedly reflects the dominant view of experts in the field of price measurement, and the position taken by the NRC committee therefore comes as something of a surprise.² This committee, whose membership was drawn from a broader range of experts than the community of price researchers, did not reach a consensus on the relative merits of the two approaches. Rather, the report states at the outset that

“If asked to assess the relative merits of the two conceptual approaches as a guide for the construction of the CPI, various members of the panel would strike the balance differently (page 3)”

and

“Despite these differences, all panel members agree that the COGI and the conditional COLI that the panel recommends share many common aspects. We also concur that neither conceptual approach, viewed in its pure form, can provide the single guide to index construction but that each can make a contribution toward dealing with the various problems that arise in designing the CPI. Taking a pragmatic approach, the panel found that it could come, sometimes by different routes, to unanimous agreement on all the specific recommendations in this report. But in its inability to achieve unanimity behind a recommendation that the cost-of-living framework be the sole appropriate basis for the construction of the CPI, our panel differs from the Stigler committee and the Boskin Commission (page 3).”

While this appeal to pragmatism is more a matter of compromise than consensus, it nevertheless represents a break with the past. It proposes a *de facto* elevation of the COGI approach to intellectual parity with the COLI, though it is a weak parity indeed given the panel’s stated skepticism about the adequacy of either approach alone.

² This dominance, however, is far from absolute. In his defense of the COLI, Triplett (2001) reviews the literature that opposes this approach and notes that the statistical agencies of many countries have rejected this view. Deaton (1998), for example, gives a rather negative appraisal of the COLI position.

The implicit rehabilitation of the COGI approach, and the corresponding demotion of economic theory as the basis for price measurement raises many issues. Is future price research to be conducted along “pragmatic” lines and, if so, what exactly does that mean and what is the role for economic theory? The fact that the panel found it necessary to discuss the main CPI issues of importance – price hedonics, new goods, the appropriate domain of the index, and so on – from the perspective of both the COLI and COGI standpoints views — suggests one answer, but raises another question: what is to be done when the two approaches disagree, as they do on many important issues?

I will argue in this paper that there is a middle course that retains many of the theoretical benefits of the COLI approach but is rooted in the principles of political economy. In this alternative view, economic theory is viewed as an informing paradigm rather than an exact description of behavior, and the COLI is seen as the rationale for a set of operational principles and not necessarily as an monetary metric of changing consumer utility. This view of theory has great appeal from the perspective of political economy, because the role of theory is to provide a rules-based procedure for revising the price index as the structure of the economy changes over time. This argument is developed in the following sections. The COGI approach, on the other hand, fails because it is based on the prices of a fixed basket of commodities and there is no internally consistent way revising the index as the economy evolves. A dynamic version of the COGI must therefore appeal to external principles (like economic theory) or to *ad hoc* pragmatism for handling change. *Ad hoc* judgments that are not anchored on a coherent and predictable principles have little conceptual appeal as a mechanism of public choice, and the history of the CPI described in the following section suggests that the impetus behind the shift

from the COGI to COLI views of the CPI originated from within the political process itself. The basic conclusion of this line of analysis is that any attempt to rehabilitate the COGI rationale for the CPI should be avoided, and that the COLI model (appropriately interpreted) should continue to guide future research on price measurement.

II. The Political Economy of Price Measurement: Brief History

The U.S. Federal government spends millions of dollars every year on its major statistical programs. It does so because macroeconomic statistics have a large impact on social welfare by informing government monetary and fiscal policy, as well as the decisions of private businesses and consumers, and by indexing private contracts and public programs for inflation. Any government program, statistical or otherwise, which affects the welfare of society to such an extent, can expect to be evaluated politically in light of its impact. It is therefore no surprise that the history of the CPI is steeped in political economy considerations.

The CPI was developed during the World War I era with the intention to automatically adjust workers' wages for inflation in order to avoid the labor unrest and political action that might have incurred if adjustments had to be renegotiated every year. (FN R-T) The CPI adjustment was intended as "rough justice" in the face of price inflation, not as precise compensation to each individual for the real income lost due to rising prices (it was, after all, a single price index). What was needed was a procedure that was easily understood and intuitively plausible, easy to implement, and above all, politically acceptable to those affected even if it did not reflect exactly the inflation experience of any one worker. This led the BLS to adopt the COGI approach of pricing a more or less fixed basket of goods in successive periods, and to the fixed-weight Laspeyres index number formula in which the weights associated with individual prices are held

constant at initial levels.

This political economy rationale carried over to World War II, with the decision by the National War Labor Board in 1942 to tie wage increases to the CPI, then known as the “Cost of Living Index” (Reinsdorf and Triplett). However, labor unions objected that this index understated the true increase in the cost of living by a very large margin, leading to the establishment of a commission by President Roosevelt to review the situation. At the center of the problem was the fact that the BLS Cost of Living Index was a fixed-basket COGI index, despite its name, and the unions argued that it didn’t take into account the substitutions people were forced to make in light of wartime shortages. A similar issue arose during the Korean War. Price measurement again came under political scrutiny in 1957 by the Joint Economic Committee of the U.S. Congress, resulting in a paper by Kenneth Arrow arguing for a COLI framework, and again a few years later by the U.S. Bureau of the Budget, which established a committee chaired by George Stigler. The Stigler committee report, which was published in 1961, also advocated that the CPI be based on COLI principle, and also introduced the price hedonic correction for quality change in work by a companion paper by Zvi Griliches.

The shift to a rental-equivalent view of housing expenditures in the CPI was another episode in which political economy considerations were raised, but the next major transforming event was initiated by Federal Reserve Board Chairman Alan Greenspan in 1995 in testimony to the Senate Finance Committee. Greenspan conjectured that the growth rate of the CPI, as it was then constituted, might have an upward bias of between one-half to one-and-a-half percentage points per year – a significant “error” given that the prevailing annual rate of inflation was around three percent at that time. The significance of this last fact was not lost on the Senate

Finance Committee, which was then struggling with the twin problems of a large contemporary federal government deficit and prospective deficits in the Social Security Trust Fund. The Committee empaneled a group of prominent economists, who concurred with the Greenspan's assessment of a significant bias in the CPI (Moulton (1996)). This led, in turn, to the establishment of the Boskin Commission, whose task was to delve more deeply into the potential source of CPI bias. When its work was finished, the commission concluded that the bias was around one percentage point, the mid-point of the Greenspan range, and attributed about half to methodological issues like substitution bias, and the other half to a failure of CPI fixed-basket methods to account for improvements in product quality and the development of new goods.

The political-economy consequence of a bias of this magnitude was driven home by the Boskin Commission's estimate that the cumulative effects of one percent per year bias would have added \$1 trillion to the national debt between 1997 and 2008 (including additional interest payments). They observed that if the bias were viewed as a formal program of the federal government, it would rank as one of the largest sources of government outlays.

The Boskin Commission report was followed by a period of debate and reassessment of the various CPI problems critiqued by the Commission. The NRC report concluded that one outcome of the Commission's work was to fully make the COLI approach "the measurement objective for the index (page 14)" by BLS, who "reported to Congress [in 1997] that it had been using a COLI concept for many years to help make decisions about the CPI (page 14)." The NRC report stated that the Boskin Commission's report "undoubtedly spurred BLS to broaden and make more explicit that commitment [to the COLI]." The subsequent changes wrought on the CPI caused an estimated three-quarters of one percentage point decrease in the average annual

growth rate of the index. The establishment of the NRC panel at the request of BLS was another important legacy of the Boskin Commission, albeit indirect.

This brief history of the CPI program reveals the important role played by political economy considerations in the evolution of the program. It is highly significant that the motivating force behind these structural changes emanated largely from the policy and political communities, indicating the importance that stakeholders and their representatives attach to the CPI. The Boskin Commission estimate of the \$1 trillion in additional national debt is a forceful reminder of the amount of money at stake, since some portion of this benefit could equally be seen as a transfer of income *from* those whose COLA benefits were reduced *to* the general taxpayer.

III. The Political Economy of Price Measurement: Theoretical Considerations

The political economy of measurement does not have an elegant mathematical formulation comparable to that of modern economic theory, but is instead derived from a looser collection of ideas and principles organized around voting theory, collective choice, the theory of special interest groups, and the analysis of political and bureaucratic institutions. This body of thought overlaps economic theory in certain areas like social welfare theory (the social welfare function and the Arrow Impossibility Theorem). There are, however, points of divergence. Public policy in a democratic system is subject to the consent of the governed and the power of special interest groups. A policy change that affects the welfare of voters, like a change in the way cost-of-living adjustments are calculated, may well be accepted by the voter even if economic theory suggests that it is unwarranted.

The potential conflict between political economy and economic theory is nowhere more

evident than in the debate over the Tax Reform Act of 1986 (TRA), which sought to broaden the base of the U.S. personal income tax by reducing tax incentives and shelters. Economic theory generally favors consumption over income as the basis for taxation, on grounds of economic efficiency, but this view received little public support (Hulten and Klayman (199x)). Income has become accepted by the public as the appropriate indicator of the ability to pay taxes, and the tax system evolved along these lines. The Boskin Commission's \$1 trillion estimate indicates that reform of the CPI can have redistributive consequences of the similar in magnitude to changes to the tax system, and both are constrained by the need to persuade stakeholders to validate the changes. If the public decides, for whatever reason, that the COGI approach to price measurement is superior to the COLI, then so be it.

The will of the voter and the perceived credibility of the policy, then, is the first, and controlling, principle of the political economy of measurement. Economists can argue that the voter's choice is not Pareto Optimal — that an increase in welfare can be achieved by a switch in policy — but it is the voter that must be persuaded, not the economist. Voters live in a world of incomplete information, and are aware (if only intuitively) of the principal-agent problem. The consequences of any policy change must be demonstrated to the public, and this implies a learning curve. The experience of tax reform is, again, instructive. A major reform of the tax system (like TRA-1986) occurs only after considerable political debate, and, after the new tax structure is introduced, there is typically a period of learning in which the consequences of the reform become apparent, and people adjust their behavior in light of the new tax incentives. Those affected by the change may succeed in negotiating modifications to the tax, and unintended consequences become apparent and are dealt with. The tax matures as stakeholders

move down this learning curve, and the tax acquires legitimacy in the process (perhaps a grudging legitimacy in the eyes of many). This is the basis for the saying “an old tax is a good tax”, and I have argued elsewhere that for many of the same reasons, “old data are good data” (Hulten(2003)).

The experience of World War I and II points to a second aspect the political economy problem. War brings large and sudden changes in the allocations of resources and to the level and relative composition of prices. These changes create economic winners and losers at a time when the society needs to pull together toward a common goal, and not face fractious wage and contract renegotiations aimed at redress of economic losses. The CPI program was initiated as a way of *pre-negotiating* a cost-of-living adjustment or escalator (COLA) for multi-year contracts and pensions promises. As such, the CPI was a low transaction cost way of providing some relief from the effects of inflation without the need for costly and uncertain annual negotiations. The pre-negotiation approach involved a trade-off between accuracy, since a single price index could not hope to provide exact compensation for every group of stakeholders. What the CPI as COLA promised was relatively simple and transparent way of rendering rough justice in the face of price inflation, and one that reduced the opportunity for some interest groups to win preferential treatment and thus galvanizing other interest groups into action.

A third aspect of the political economy of price measurement follows as a extension of the preceding point. Not only is the a need for a low-transaction cost solution to inflationary price shocks, there is also a need for price index itself to change when there a secular or permanent changes in the by structural changes in the economy. Technological and product innovation, as well as changing tastes, cause new goods appear and older ones to drop out of the

marketplace, and also lead to permanent change in relative prices. It is desirable, from the standpoint of legitimacy and low transactions cost, to have a set of *a priori* rules to guide the process of programmatic change rather than to rely primarily on pragmatism, which can be bent to serve the purpose of powerful special interests. An accepted set of rules, or at least a conceptual framework, plays the role of “honest broker,” as free as possible from the opportunity for discretionary manipulation of interest groups.³

What do these loose principles of political economy have to say about the relative desirability of the pure COLI and pure COGI frameworks? The COGI wins decisively on the point of transparency. The cost of purchasing the same basket of goods priced month after month is highly intuitively concept of price inflation. People make this sort of mental comparison all the time when forming their own impressions about inflation. On the other hand, the pure COLI framework, with its income and substitution effects and compensating and equivalent variations, is notoriously hard to teach to college undergraduates in courses on intermediate microeconomic theory. The related point about perceived credibility is not so favorable to the COGI approach, despite the transparency advantage. The perceived credibility of the CPI ultimately depends on how well it matches impressions about inflation on the part of consumers. We will see below that this was the Achilles Heel of the COGI approach.

The COGI also rates well as a low transaction- cost way of dealing the impact of inflation in on real incomes. It is a single index based on a fixed basket of goods, leaving little room (in

³ It is worth noting, in this regard, that the decision by Congress to grant the Bureau of Labor Statistics a relative degree of independence was an explicit recognition by politicians themselves that the nation’s macroeconomic statistics needed to be guided primarily by principles rather than politics.

principle) for discretion and manipulation. This approach could, logically, support a multiplicity of fixed-basket index, each crafted to reflect the consumption pattern of subgroups of the population, but from the standpoint of political economy, this opens the door to special interest demands for special treatment (a point discussed in greater detail in the final part of this paper). By contrast, the logic of the pure COLI approach requires a separate index for every consumer, defined according to their own utility functions. The alternative is to base the COLI on the utility function of the non-existent 'representative' consumer, a point we will also revisit below.

So far, the COGI approach is well ahead according to the 'principle' of political economy set out above. The final point, however, is fatal to the COGI. The virtues of the fixed-basket approach are overwhelmed by a critical flaw: in the dynamic world of product innovation and shifting relative price, the fixed-basket approach has no way of modifying itself to reflect the reality of changing consumer demand. Take literally, strict application of the COGI approach the this would mean repricing the fixed basket of 1919 goods, an obvious absurdity in measuring price changes in the year 2006. It is this flaw that led to the lack of credibility expressed by the labor unions during World War II, when the fixed-basket conception of the price index was perceived as inadequate to the task of adjusting for wartime price inflation and rationing. Greenspan's later remarks about the inadequacy of the CPI as indicator of inflation for monetary policy, and his concern that the index did not reflect the true dynamism of product innovation, can also be interpreted as part of the challenge to the perceived credibility.

The COLI approach, on the other hand, is well-suited to the problem of economic change because it is rooted in the economic theory of the consumer. The COLI based on this theory

readily handles relative price changes, and the utility function underlying the COLI indicates which goods in should principle be included in the index at any point in time (and thus which goods should be added and which deleted). The theory also suggests ways to incorporate new goods that captures the increased utility obtained from product innovation. The COGI fails in each of these respects and, recalling the Boskin Commission's estimates, its use results in an upward bias in the CPI of about one percentage point per year. The resulting lack of perceived credibility of the fixed-basket approach is a key factor in the pressure for change emanating from the policy process.

IV. Economic Theory and the Cost-of-Living Index

A. Is Economic Theory the Answer?

The obvious way to fix the lack of dynamism of the COGI is to appeal to economic principles. These principles suggest that both the composition of the basket of commodities priced in any period, and the associated weights, change over time to reflect the realities of the consumers' budget sets and that the theory of the consumer provides (via the COLI framework) a paradigm for implementing these changes. However, the NRC report resists this conclusion, on the grounds that the theory of utility, is not adequate to the task of shaping the CPI because of its questionable relevance for explaining human behavior. The NRC report concludes that:

“In contrast to the core assumptions of the economic theory of consumer behavior, experimental research in psychology and decision making indicates that choice, or *revealed preference*, is at best an imperfect measure of experienced utility. Choices are often based on erroneous assumptions, always dependent on the given context, and frequently fail to increase experienced utility even when the consumer has abundant experience with the product of choice” (page 54).

Moreover, even if utility functions are assumed to exist, they almost certainly fail to exhibit the

requisite properties of homotheticity and separability. The first of these issues involves the problem of the “path dependence” or uniqueness of the index (Hulten (1973), Samuelson and Swamy (1974)). Unless the utility function exhibits the property of path independence, there is, in general, no unique representation of the cost-of-living index. Path independence involves, among other things, the property of homotheticity, which, in turn, requires unitary income elasticities, and thus the assumption that goods are neither luxuries nor necessities. This led Samuelson and Swamy to remark that:

“Nor should we shoot the honest theorist who points out to us the unavoidable truth that in nonhomothetic cases of realistic life, one must not expect to make naive measurements that untutored common sense longs for; we must accept the sad facts of life, and be grateful for the more complicated procedures economic theory devises (page 592).”

This is a sobering reminder about the transparent applicability of economic theory, and hardly encourages heavy reliance on economic theory as the sole, or even main, basis for the CPI.

The problem of path dependence is also linked to the problem of separability (Hulten (1973)). The NRC report notes two separate aspects of this problem: one concerning the domain of the index and the other, aggregation of preferences to achieve a group COLI. The first aspect involves the fact that the utility level (indifference curve) associated with a subset of goods selected for constructing the COLI-CPI will inevitably depend on goods not included in the bundle. For example, the relative value of high-performance automobiles depends on the condition of the roads on which the auto is expected to travel and on the nature of the traffic laws. The former is a plausible candidate for inclusion in the CPI, while the latter are background or environmental variables that are not. This is the source of the NRC report’s distinction between unconditional and conditional indexes, the latter being conditioned on a

given set of “outside” variables.

The preceding remarks refer to the COLI for a single consumer. The CPI is a group index and, if the CPI is to be based on the COLI approach, the relevant COLI must refer to the standard of living of the group and not just of a single individual. The formulation of a group COLI leads to the issue of how to aggregate across individuals, and the problem of path dependence rears its head here, as well. Even if a unique COLI can be defined for every individual, it is unlikely to exist for the group as a whole. And, if all else succeeds, there is still a potential problem with the COLI approach: tastes may change over time, leading to a shifting and ambiguous notion of living standard.

One way out of this conundrum is to appeal to the representative consumer model. This approach avoids the problems associated with aggregation by focusing on the “average” consumer within a group, and endowing this representative agent with all the properties needed for a well-defined COLI. The NRC report notes that

“Indeed, it is often difficult to discuss COLIs with non-economists, policy makers, or the public at large without some sort of appeal to [this] concept (page 241).”

This statement seems to suggest that the representative consumer model is a “user friendly” way of discussing the COLI with non-specialists. However, the report also denounces the representative consumer approach in the following terms:

“This imaginary person has a living standard that is somehow supposed to represent a national level of living and for which a cost-of-living index number can sensibly be defined. Such fictions can be justified only under extremely implausible conditions (page 51).”

Some of problems with the COLI and representative consumer have been addressed by

innovative research, and partial fixes have been proposed. However, the NRC' main point about the lack realism of consumer theory is too hard to refute. Indeed, much the same can be said about the supply side of economy, where the aggregation conditions for production functions and inputs are equally implausible.

This negative critique leads to a more general question: if the assumptions of theory have to be exactly valid in order for theory to be applicable to any important issue of public policy, not just the CPI, can theory ever be used to inform policy? The NRC report seems to advocate "taking a pragmatic approach," in the quotation cited in the opening paragraphs of this paper, but does not spell out any conceptual basis for this pragmatism, nor does it indicate how to judge between competing pragmatic prescriptions.

B. Economic Theory as a Parable for Constructing a Price Index

The irony of this line of attack is that no one would seriously propose using this framework to estimate an exact COLI from every individual's utility function even if all the assumptions of utility theory were completely valid. This is a computationally and administratively impossible task, even if the many econometric difficulties involved could be satisfactorily overcome and methodological disputes resolved. The critique of the CPI should therefore start with the index as it stands and examine how theory might better achieve the goals of the program. The political economy discussed in the preceding section made the case that the COGI framework cannot meet these goals in a dynamic economy, whereas COLI theory can at least to do a reasonably objective "rough justice" to these goals.

For example, the COLI paradigm favors the use of flexible index number formulae, with a frequent change of weights over a fixed weight model, in order to deal with the problems of

substitution bias. It is possible to argue about the magnitude and existence of a substitution bias based on utility theory, but not with the associated fact that demand curves slope downward (which leads to product substitution). The utility function is also a convenient framework for delimiting the domain of the price index to the set of goods that enter consumer budget sets and utility functions. Theory also suggests the need to revise the composition of the CPI basket to reflect the goods that enter and exit the utility function, and also suggests ways to adjust the CPI to account changes in consumer welfare arising from new goods and quality change.⁴

When it is applied this way, COLI theory does not impose itself as a total concept, but instead acts as a rule-based “informing paradigm” or “parable” for meeting the goals of the CPI program.⁵ The fact that theory is rule-based and places limits on discretionary pragmatism is important for its perceived legitimacy and thus enhances its value whatever its other perceived deficiencies. As for the accuracy of a CPI informed by COLI principles, this is an empirical matter, and it is the perceptions of inflation that counts the most. It is worth noting, again, that

⁴ The full implication of this point is best made by citing the following remark by Triplett (2001): “Constructing a CPI is not just a matter of choosing a formula that combines the detailed component prices Hundreds and perhaps thousands of decisions must be made in measuring those detailed component indexes. Those decisions are not solely statistical or sampling or collection and processing decisions. Many of them involve economic questions Applying the theory of the COL index to the CPI means that those ... decisions are guided by a consistent, overall decision-making framework, which is the economic theory of consumption (page F315).”

⁵ Parables are stories told to illustrate a valid point or principle. Thus, the fictitious nature of theoretical constructs like the representative consumer are not necessarily useless just because they are not true. The remark by Triplett (2001) is particularly pertinent here: “Theory always abstracts. Krugman (1998, p. 19) has noted that ‘Economic theory is ... a menagerie of thought experiments – parables, if you will – that are intended to capture the logic of economic processes in a simplified way’. That is often lost sight of in criticisms that confuse descriptive usefulness with analytic usefulness (page F318).”

the pressure for changing the CPI originated in the policy community and that the perception of an upward bias in the existing CPI led to a demand for a greater use of economic prescriptions in the program rather than less.

V. Individual CPI Issues

A. Changes in Product Quality

Products come and go in a dynamic world, with the result that the market basket of the 1919 CPI is vastly different from the current basket. As the composition of the market basket changes, there is the technical problem of how to bring in the new or improved goods as older varieties and obsolete goods disappear. This is done in a variety of ways described in the NRC report, but the net result was judged unsatisfactory by Shapiro and Wilcox (1996), who estimated that the failure to account for quality change led to an upward bias at 0.25 percentage points per year (with a “new goods” bias of 0.20 percentage points), and by the Boskin Commission put the combined bias at 0.60 percentage points, but did not split it into the two components.

The NRC report singles out the hedonic price regression approach as the most promising way of dealing with this quality bias. However, the report’s Recommendation 4-3 urged the BLS to adopt a “more cautious integration of hedonically adjusted price change estimates into the CPI (page 141).” This recommendation reflected the panel’s view that there is not enough experience with hedonic techniques in non-high technology items, and that the instability of estimated parameters in some existing studies raised “perceived credibility” issues. The panel sensibly recommended more research and experimentation, but as noted above, did not spell out what it meant by “perceived credibility” or just how much credibility was needed before the technique was acceptable. Ironically, new research by Pakes (2002) directly challenged this

second recommendation by arguing that parameter stability was irrelevant to the problem of adjusting the CPI for quality change. More research has been done or is under way, and the present state of the debate is thus highly unsettled, further complicating the issue of perceived credibility.

Clearly, more needs to be said about hedonic modeling and the stability of the parameters and forecasts. Here is where one of the major problems with the hedonic approach comes to the surface: the “characteristic” variables on the right hand side of the hedonic regression (whose unstable parameters are the focal point of the debate) should be determined by the theoretical structure of the underlying choice model, but in practice they seldom if ever are. Part of the debate over the selection of characteristics has distinguished between ones related to inputs and others related to outputs (computer processor speed versus number of MIPS instructions actually processed). Another part has raised the question of separability of characteristics (inside versus outside), and observed that processor speed or MIPS depends on “external” goods like software (alternatively, automobile horsepower or speed, on the one hand, versus road quality on the other). Without an underlying structural model tying goods to their component characteristics, the question of parameter stability and robustness of alternative quality-adjustment forecasts becomes an important problem.

B. New Goods

Product innovation also takes the form of “new” products that were unavailable in the past: open heart surgery, cellular telephones, automatic teller machines, the internet, and personal computers are prominent examples. Hicks (1940) proposed a theoretical solution to the problem of measuring the consumer surplus associated with the arrival of such goods in the

market place, based on comparing the so-called “reservation price” at which none of the good would have been demanded anyway to the price at which it is introduced. The CPI currently makes no adjustments to account for the benefits of new goods, and has historically been slow in even incorporating such goods in the CPI sample of goods. As noted above, the estimates of Shapiro and Wilcox suggests that this results in a 0.20 percentage point upward bias in the CPI. Nordhaus (1997) takes a more emphatic view of the bias, arguing that the history of lighting suggests that “by the very nature of their construction, price indexes miss the most important technological revolutions in history (page 54).” Hausman (1997) proposes an econometric framework for measuring the omitted benefits.

The NRC recommended against making an adjustment in the CPI for new goods in its Conclusion 5-1. It bases this conclusion on what it sees as the problems with Hausman’s econometric framework, and cites several criticisms by Bresnahan (1997). The NRC report takes the position that

“Research into welfare and price effects associated with new goods is important and deserves attention, but it is unlikely that such a program will produce a consensus methodology in the near future. Given the level of uncertainty among economists about the accuracy and replicability of current econometric techniques for estimating virtual demand, it would be imprudent for BLS to attempt to adjust the CPI to account for increased welfare that occurs at the point when new products are introduced (page 160).”

This is a judgment call by a panel of experts in the field, and must be honored on political economy grounds alone because it reveals the strong absence of the necessary “perceived credibility.” However, the panel might have been clearer on the source of the problem. On the one hand, the remarks cited above suggest that the problem with the Hicks-Hausman approach is essentially one of implementation. On the other hand, the report goes on to state on the same

page that

“Several members of the panel – particularly those advocating separate price and cost-of-living indexes – are unconvinced that adjusting the CPI to account for point-of-introduction would be a good idea even if the practical estimation problems could be solved.”

Under this second view, it is unclear why the additional research called “important” in the first quotation is necessary at all.

The confusion is compounded by the another position taken in the same chapter. After discussing how the new goods problem differs from the quality change problem (new goods have new characteristics not present in existing goods, whereas quality improvement involves more of the same characteristics), the report concedes that

“These contrasts notwithstanding, no sharp dividing line separates a new good from a quality improved product (page 156).”

The dividing line shifts according to the level of aggregation of the analysis. In Nordhaus’ history of lighting example, the electric light bulb is a new good if compared with an oil lamp, but it is a quality change if the good in question is “lighting.” Similarly, the Intel Pentium processor is a new good in a narrow sense, but a quality improvement in a larger context. Since all categories of goods necessarily represent some degree of aggregation, the NRC report’s recommendations about the different treatment of new goods and quality change seems contradictory: at a high degree of *disaggregation*, the virtual price change (and benefit) associated with the new goods would not be counted; in a more aggregated analysis, the same goods would be treated as an improvement within the broad category of like goods and would be treated under quality-change rules in which price changes and benefits are counted. Clearly,

more needs to be said on this issue.

C. Subgroup Indexes and Plutocratic versus Democratic Weights

An entire chapter is devoted to the question of “whose index?” The main issue is the appropriateness of a ‘one-size-fits-all’ CPI for indexing the benefits of subgroups, like the elderly, whose consumption patterns may differ from the pattern of the population as a whole. If this is true, the CPI constructed from weights based on the whole population may provide a biased estimate of the inflation experienced by the elderly, and policy makers may want to take this into account in setting Social Security pension policy. This is appropriately treated in the NRC report as an empirical question for which more research into demographic expenditure patterns is needed.

The associated political economy question of the transaction costs associated with a proliferation subgroup indexes is not given as much prominence as it perhaps deserves. The report does cite, on page 229, the Boskin Commission’s observation that “In principle, if not in practice, a separate cost of living index could be developed for each and every household based on their actual consumption and prices paid.” Taking the subgroup index issue to this extreme would obviously cause the CPI program to sink under the burden of an administratively unworkable and hugely costly system. There is obviously a trade-off between the benefits of improved subgroup accuracy and the increasing cost of achieving this accuracy by dividing the subgroups ever more narrowly. Another political economy cost arises from the realities of collective choice, which suggest that once an exception is made for one demographic group (e.g., the elderly) the same arguments can be applied to finer demographic gradations (e.g., the elderly poor, the elderly poor living in high cost regions, and so on). There is no the natural limit to this

process except the power of special interest groups, and as transaction costs increase, a “rough justice” approach becomes increasingly attractive.

This chapter of the report also calls attention to the distinction between “plutocratic” and “democratic” price indexes. The report notes on page 222 that

“The Consumer Price Index (CPI) is now a plutocratic index: the weight of each household’s consumption pattern in the overall index is proportional to that household’s total consumption expenditures. Since consumer expenditures rise with income, this approach gives more influence in the construction of national and regional indexes to the consumption patterns and prices paid by the rich than to those of the poor (page 222).”

The alternative democratic approach

“Would construct individual price (or cost-of-living) indexes for a representative sample of the whole population and then average them, assigning the same weight to each person, regardless of the magnitude of their consumption expenditures (page 223).”

The plutocratic index is appropriate for the measuring the actual rate of inflation in the macro economy. However, the choice between plutocratic and demographic indexes is ultimately a political matter. The job of the technical expert is to assess the consequences of the alternative approaches.

As above, the political economy of the problem might usefully be spelled out. Suppose, for example, that everyone in the society happens to agree that the prevailing distribution of income is optimal. In a democratic society, the plutocratic weights based on current expenditure shares would therefore be judged to be socially optimal as well, implying that the plutocratic and politically optimal weights are identical. If, on the other hand, the actual and optimal distributions of income diverge, the two sets of weights will be different, but they will come back together if an optimal redistribution of income occurs through a system of taxes and

transfers. This line of argument suggests that the problem with the plutocratic weights is really a matter of the failure of the political process to deliver an optimal distribution, and not an issue about the design of the CPI. The optimal distribution of income, in this case, may not be strictly equalitarian or “democratic,” since democracies have not, as a rule, opted for pure egalitarian outcomes. In this situation, a CPI based on “democratic” weights can hardly justify being described as politically democratic.

VI. Concluding Remarks

The NRC report contains a great quantity of valuable material and deserves much praise. Moreover, it took an intellectual *tour de force* to find the common ground of the competing points on so many different issues. However, it is also unfortunate in this regard, because it might have been better to present the different paradigms as competing alternatives, so that the differences, not just the common ground, could be explored. This paper has tried to make the case for one of these views over the other, based on political economy principles and a view of economic theory that is more suitable for policy purposes than pure textbook theory. This is not a conventional way to approach the problems of the CPI, and the theory of political economy as applied to measurement is not at all well established. This paper is offered as a first step in this direction.

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