
HOW DOES FISCAL POLICY AFFECT THE AMERICAN WORKER?

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OVERVIEW

American policymakers have begun to prepare the public for fiscal policy changes, such as comprehensive reforms of the Federal income tax and Social Security retirement systems, which would profoundly alter the lives of American workers and their families. Projected fiscal imbalances are clearly unsustainable, and Europe's economic and demographic crisis, characterized by high unemployment and falling fertility rates, illustrates the grave dangers of policy mistakes. But no American consensus has emerged, partly because there is no generally accepted and empirically grounded theory explaining how fiscal policy affects employment and fertility. This paper lays out a simple but comprehensive framework for analyzing such questions, by proceeding from the homey example of a children's lemonade stand to describe how Augustine's theory of personal love and Aristotle's theory of distributive justice were originally integrated within economic analysis. The second section applies the analysis to describe and update "Rueff's Law," which explains how employment and unemployment are determined by the cost of labor (measured as workers' share of total labor and property income after government taxes and benefits). The analysis shows that funding social benefits either by borrowing or with income taxes raises the cost of labor and unemployment, while funding such benefits with payroll taxes does not increase unemployment but may lower labor market participation. The third section extends the analysis to fill a crucial gap in the economic theory of fertility and shows that most variation in the Total Fertility Rate (TFR) among the fifty countries for which data are available (compris-

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ing about two-thirds of the world population) is explained by just three factors: Fertility is about equally inversely related to per capita social benefits and per capita national savings, but strongly, positively related to frequency of worship (an indicator of people's preference for persons other than themselves). Thus, either allowing social benefits to rise as a share of national income (as Democrats propose) or forcing workers to save more by shifting the tax burden to labor income (as Republicans propose) would tip fertility below the replacement rate of about 2.1 children per couple. Combining these analyses leads to an important conclusion: To avoid both a fall in fertility below the replacement rate and a rise in the unemployment rate as in Europe, social benefits must not be permitted to grow as a share of national income and must continue to be financed by taxes on labor income, while government services benefiting both workers and property owners must be funded by an income tax that falls equally on labor and property income.

I. INTRODUCTION

American policymakers have begun preparing the public for fiscal policy changes, such as comprehensive reforms of the Federal income tax, Social Security, and Medicare systems that would profoundly affect the lives of American workers and their families. It is generally agreed that projected fiscal imbalances are unsustainable. Moreover, a chorus of analysts across the political spectrum (including Phillip Longman, Robert Samuelson, Nicholas Eberstadt, George Weigel, and Allan Carlson) has warned that the United States is on the brink of exactly the same demographic black hole that already has started to swallow Europe and Japan, characterized by falling fertility, chronic unemployment, and overstrained budgets. No American policy consensus has emerged, partly because of political faction (which, as James Madison noted, is endemic to representative government), but partly also because there is no generally accepted and empirically verified economic theory explaining how fiscal policy affects employment and fertility. In this paper, I attempt to lay out a simple but comprehensive framework for analyzing such questions by updating the theories of two important but neglected economic thinkers: St. Augustine and 20th century French economist Jacques Rueff.

Our *Symposium on The American Worker* is necessarily an interdisciplinary effort, bringing together experts in law, moral philosophy, and economics, to name only a few. But how can these apparently disparate perspectives achieve the common good of

our mutual understanding of the subject without, on the one hand, succumbing to the mutual incomprehensibility of scientific and literary cultures famously alleged by C.P. Snow¹ or, on the other hand, requiring all other disciplines to submit to colonization by what George J. Stigler styled the “imperial science”² of economics?

Both problems can be avoided if we begin by acknowledging that economics differs fundamentally from natural sciences by treating a certain aspect of *human* behavior, as Lionel Robbins’ famous but widely misquoted definition³ made clear. We are not dealing with a distant galaxy or an exotic breed of mollusk whose existence and nature can be learned only by or from specialists: we are dealing with the human race, “to which so many of my readers belong,” as G.K. Chesterton dryly put it.⁴

It is true that economics is today a mathematical discipline. That is because moral philosophy always has been a mathematical discipline, and economics always has been a branch of moral philosophy, not vice versa. As we will see, Aristotle formulated the theories of production, distributive justice, and justice in exchange (which economists now call “equilibrium”) as mathematical functions, just as Augustine formulated the theories of human love, utility, beneficence, and the meaning of the Two Great Commandments as expressing our mathematical scales of preference (1st, 2nd, 3rd, and so on) for persons as ends and other things as means.⁵ And Thomas Aquinas followed their examples when he integrated these elements into a single coherent framework. But Alfred Marshall once gave another economist this excellent advice: “(1) Use mathematics as a shorthand language, rather than an engine of inquiry. (2) Keep to them till

1. See C.P. SNOW, *THE TWO CULTURES* (1993) (including original Rede lecture that Snow delivered in 1959).

2. GEORGE J. STIGLER, *MEMOIRS OF AN UNREGULATED ECONOMIST* 191 (1988).

3. “Economics is the science which studies human behaviour [sic] as a relationship between ends and scarce means which have alternative uses.” LIONEL ROBBINS, *AN ESSAY ON THE NATURE & SIGNIFICANCE OF ECONOMIC SCIENCE* 16 (2d ed., rev. 1935).

4. VI G.K. CHESTERTON, *THE NAPOLEON OF NOTTING HILL*, in *COLLECTED WORKS* 220 (Ignatius, 1991) (1904).

5. See ARISTOTLE, *THE NICOMACHEAN ETHICS* (Sir David Ross ed., Oxford Univ. Press 1958) (c.325–350 B.C.) [hereinafter ARISTOTLE, *THE NICOMACHEAN ETHICS*]; ARISTOTLE, *THE POLITICS* (T.A. Sinclair ed., Penguin Books 1962) (c.325 B.C.); SAINT AUGUSTINE, *CITY OF GOD* (John O’Meara ed., Penguin Classics 1984) (413–427); SAINT AUGUSTINE, *ON CHRISTIAN DOCTRINE* (Christian Classics Ethereal Library [public domain] n.d.), available at <http://www.ccel.org/ccel/augustine/doctrine.html> (397–427) [hereinafter AUGUSTINE, *ON CHRISTIAN DOCTRINE*].

[sic] you have done. (3) Translate into English. (4) Then illustrate by examples that are important in real life. (5) Burn the mathematics.”⁶ In other words, mathematics cannot go beyond what can be said in English. But as we will see, it does serve some very useful purposes: checking whether a theory is logically complete, discovering its implicit assumptions, and quantifying and testing its predictions. I propose to follow Marshall’s advice and explore the principles, by which fiscal policy affects the employment and fertility of American workers, by beginning with a simple example, which I hope will help us realize (like Moliere’s character who was equally astonished and proud to learn that he had been speaking prose all his life) that all of us have been practicing economics without knowing it. I plan not to burn, but to bury the mathematics (in footnotes) for the sake of those who find prose too prosaic.

I will start with the homey example of a children’s lemonade stand to describe the elements of economic analysis and apply them to describe its four aspects: production, consumption, gifts, and exchange.

Next, I will apply the same analysis to explain Rueff’s Law, which explains unemployment as a function of the cost of labor (which turns out to be the same as workers’ share of total labor and property income, after subtracting taxes and adding government benefits to persons). We will find that, since social benefits accrue to owners of “human capital,” while an income tax falls on owners of both “human” and “nonhuman capital,” social benefits funded by taxes on property income raise the cost of labor and unemployment, while benefits funded with payroll taxes lower labor market employment and take-home pay, but without raising the net cost of labor or the unemployment rate.

Then, I will extend the analysis to explain a crucial gap in the economic theory of fertility, which is caused by neglecting Augustine’s insight that every person’s most fundamental scale of preferences is not for economic goods (that is, utility), but for the persons who are the ends or purposes of the activity (that is, love at the personal level and distributive justice at all social and political levels). We distribute our personal or political resources to other persons in proportion to the significance of those persons to ourselves, and since the same scarce resources cannot be consumed by oneself as well as others, the share of resources devoted to oneself is inversely related to the share devoted to others. This will explain why most variation in the Total Fertility Rate among the fifty countries for which data are available (com-

6. MEMORIALS OF ALFRED MARSHALL 427 (A.C. Pigou ed., 1956).

prising about two-thirds of the world population) is explained by just three factors: the TFR is inversely related to per capita social benefits and per capita national saving (resources devoted to self), but it is positively related to frequency of worship (an indicator of resources allocated to other persons).

The analysis leads to two important conclusions. First, if social benefits increase as a share of national income, as is projected under current policy, and are funded either by borrowing or by the income tax, the unemployment rate will rise as it has in Europe, and as a result, the actual U.S. national income will fall further below its potential amount at full employment. Second, either allowing social benefits to mushroom as a share of the economy (as Democrats propose) or forcing workers to save more by shifting the tax burden from income to payroll taxes (as Republicans propose) would tip fertility below the current replacement rate, of about 2.1 children per couple, to as low as 1.6 by 2075. Therefore, to avoid an increase in unemployment and a fall in population, social benefits must not increase significantly as a share of national income and must be financed by taxes on labor income, while general government is funded by an income tax that falls equally on labor and property income.

II. CONCEPTUAL FRAMEWORK

A. *The Economics of a Lemonade Stand*

The elements of economic theory necessary to explain the effects of fiscal policy on employment and fertility can be understood by anyone familiar with the working of a children's lemonade stand. The prerequisites of such an enterprise are a product (lemonade), a supply of potential customers (say, the people entering or leaving a hiking trail or bike path on a warm day), and a purpose (say, using half as spending money and donating half for disaster relief). To produce lemonade, as with almost any other product, it is necessary to combine the services of some person(s) (so-called "human capital") with those of productive property ("nonhuman capital"). To keep track, we will suppose that a brother and sister are involved: One supplies the labor (mixing the ingredients, setting up the stand, making a sign, waiting on or soliciting customers), while the other supplies the property (say, a folding table, a pitcher, a cooler, a mixing spoon, glasses, poster board, and marker or crayons for a sign) and the raw ingredients (lemonade mix, water, and ice).⁷

7. We might also recognize a third function, enterprise: whose idea was the lemonade stand; who chose the time and location, etc.? I will ignore this

Beyond these prerequisites, the business is largely a matter of price. Because customers ordinarily value the first glass of lemonade more highly than the fifth, the demand for lemonade varies inversely to its price. If the price were set too low (say, a penny a glass), the supply of lemonade would be quickly exhausted: Customers would have to be turned away; yet the stand would fail to cover its cost of raw materials, much less provide any income for the children. Economists call this “excess demand.” If the asking price were too high (say, one hundred dollars a glass), there would be no customers and, again, no income: a case of “excess supply.” Somewhere in between is the price that equalizes supply and demand, maximizing income for the sellers and conforming most closely to the preferences of the customers. Ordinarily, this optimum price cannot be predicted in advance but requires a certain amount of trial and error.

Anyone who has observed the process in real life realizes that it is necessary to take into account the demand for lemonade, not only from potential customers, but also from the “worker” and “proprietor” of the stand. In calculating quantities to produce and the selling price, the sellers will want to allow for the possibility of drinking some of the lemonade themselves, especially if it promises to be a long, warm day. (They may be idealistic but, also, thirsty.) If demand is slack and the price received from customers is below a certain point, the sellers may prefer to drink the stuff themselves; on the other hand, if demand is brisk and the price higher, they may curb their own consumption in order to increase the stand’s cash sales and their own compensation.

Now, how should the revenues from the sale of lemonade be divided? It might seem that a fifty-fifty split makes the most sense, and if the children contributed equally to starting the enterprise, this is a reasonable way to split any profits (what is left over from sales after paying costs). But this does not help in figuring out the compensation of the worker and proprietor because their services comprise most of the costs. A little experience reveals that what is fair compensation varies and depends ultimately on how sales revenue responds to changes in the relative contributions of the worker and proprietor. For example, suppose that, on two successive days, all of the conditions but one were the same—same number of passersby, same weather, same quantity of lemonade produced and offered for sale—

complication and treat profits as if they were a part of property compensation since our purpose is basically to understand the relation between a product’s price and the compensation of its producers.

except that, on the first day, the lemonade stand's "worker" puts in four hours, but on the second day, five hours, producing lemonade and waiting on customers. It is obvious, in this case, that the additional revenue must be due to the additional effort by the worker. Alternatively, suppose that the number of hours worked and all the other factors are the same on both days, except that, on the first day, there is no cooler to keep the lemonade from becoming lukewarm while, on the second day, the "proprietor" brings a cooler, thus allowing the advertised "Ice Cold Lemonade" to be sold ice cold rather than lukewarm. In this case, the increase in sales on the second day, compared with the first, obviously is attributable to the provision of the cooler.

In principle, the whole proceeds from the sale of lemonade can be divided in this way between the child who provides only labor and the child who provides only the use of property. The children will notice that, just as the value of an additional glass of lemonade to a customer varies inversely with the quantity the customer has already consumed, the value of the worker's and proprietor's incremental services varies inversely with the amount already provided. For example, the amount of extra sales realized when the worker works one hour is obviously larger than when he works none, and that, in turn, is larger than the extra sales realized when the worker works for two hours instead of one, than working three hours instead of two, and so on. Similarly, the increase in sales will normally be larger after the first dozen ice cubes are added to the pitcher than after the second dozen. So, if the children accurately perceive what is happening, they should be able to divide the income with a reasonable degree of objectivity, in proportion to the share of the proceeds traceable to the contributions of each. It is often difficult in the real world to disentangle all the variables, especially for an isolated business. But it is much easier to see under conditions of competition—for example, with one or more competing lemonade stands in the vicinity—because the change of a single feature by one business firm results in its capturing a larger share of the market, thus forcing the other competing firms either to offer the same feature or else lose customers and ultimately go out of business.

B. *From Producing Lemonade to Producing its Producers*

In describing the lemonade stand, we have sketched out the general description of a business firm that produces one kind of good (in this case, lemonade) with two kinds of factors or producers (people and property). And in explaining the effect of

fiscal policy on employment at the national level, we will find that the whole economy can fruitfully be viewed as if it were one large stand producing a single composite product, GNP or GDP, instead of lemonade. This is because the analysis of unemployment can take the absolute number of workers and the absolute size of the “nonhuman capital” stock as given. (The unemployment rate measures the share of workers employed or unemployed rather than their absolute numbers.) And we will learn that the unemployment rate is closely linked to the net shares, rather than the absolute amounts, of total income received by workers and property owners. The simplification is further justified because, practically speaking, all unemployment occurs within the labor market, not within households, and because (with the partial exceptions of formal education and health care) market production is confined almost entirely to nonhuman goods.

So, if we left the analysis here, we would be able to explain both how products and their producers’ incomes originate and what causes the producers to be employed or unemployed—but not where the producers or their productive property come from. But, without accounting for that, we would have nothing to say about fertility or population and little to say about what causes income and output to grow. In our example, where did the “proprietor’s” property—the table, pitcher, cooler, and so forth—come from? These items must have been produced by a process essentially similar to the children’s production of lemonade: by combining the services of people and property, possibly produced within the children’s family, but more probably, by a business firm from which the family purchased them. Moreover, in every lemonade stand in my experience, the productive property has been borrowed from, without compensation to, the children’s parents: that is, it has been received as a gift. Both facts apply also to the children themselves and are central to the discussion of fertility: First, the children were produced (or “reproduced”) by their parents in a way analytically similar to the children’s production of lemonade or the business firm’s production of the cooler; and second, the endowments of human and nonhuman goods with which the children began life were received as gifts. As G.K. Chesterton put it, “the business done in the home is nothing less than the shaping of the bodies and souls

of humanity. The family is the factory that manufactures mankind.”⁸

Thus, to have a truly general theory embracing fertility as well as employment, we must be able, when necessary, to regard the two kinds of factors, human and nonhuman, as also being two kinds of reproducible goods, human and nonhuman. The analytical distinction between producer and product typically depends not so much on their inherent qualities, as on how humans treat them: Just as we can use a computer either to play games or run a business, and drive a car for business or pleasure, we can also use our own human faculties for work or recreation (or for activities like worship, which is neither). And our description must be able to account not only for the ways in which an individual person, a family, and a government resemble one another, but also for how they differ.

To generalize our discussion, therefore, we might observe that *economics is essentially a theory of providence*. Every economic action raises, and its description by economic theory must answer, three basic questions: First, *for whom* shall I provide? Second, *what* shall I provide? And third, *how* shall I provide it? The answer to the “*how?*” question is simple when neither gift nor exchange is involved because, in that case, everyone must produce all of what he or she uses from his or her own resources. This would have been the case if our children had produced lemonade only to drink it themselves. But when exchange is involved (as with selling lemonade to customers for money, which can then be exchanged for an indefinite number of other goods), the “*how?*” question requires a two-part answer: (a) each producer first produces something that he or she thinks someone else will value more highly than the good that that person has produced; and (b) the two exchange their products for mutual benefit. This leaves us with four elements to describe. We can give a name to each and describe it as concisely as possible. I will put their mathematical descriptions in footnotes, so as not to daunt the reader who is not mathematically inclined. Since all four elements are simultaneously necessary for a complete explanation, the order in which we consider them is somewhat arbitrary and may be rearranged as necessary for clarity of exposition. What comes first in logical order may be last in the succession of time, and vice versa. But in describing them I will try as far as possible to treat them in logical order. The lemon-

8. ALVARO DE SILVA, G.K. CHESTERTON ON MEN & WOMEN, CHILDREN, SEX, DIVORCE, MARRIAGE & THE FAMILY 141 (1990) (citing G.K. Chesterton, *The Policeman as a Mother*, THE NEW WITNESS, Nov. 14, 1919).

ade stand, or any economic activity, can be fully described in four brief sentences, or when amplified, four brief paragraphs, to which correspond four mathematical equations⁹:

1. *For whom: "Final Distribution" (Personal Gifts and Crimes, and Distributive Justice).* We express the significance of the persons who are the "ends" or purposes of our actions (including ourselves) by distributing the use of our goods among them.¹⁰ Each person's actual consumption of goods (abstracting from differences in timing) equals the total wealth or income to be distributed, multiplied by that person's significance relative to all the persons sharing in the distribution, and, so, is equal to that person's factor income plus any net "transfer payments" received or given.¹¹

2. *What: "Utility" (Consumption).* We value (or rank, or prefer) scarce economic goods, like lemonade, as the means we intend to be used by or for the persons who are the ultimate

9. Equations beginning with "1" denote the "two-factor, one-good" model, and those beginning with "2" denote the "two-factor, two-good" model. We will use the first for the discussion of employment and the second for the discussion of fertility. All the actions described are understood to have the dimension of time; for example, consumption, C, should be understood as C/ δt , or consumption *per unit of time*—the notation for which is usually omitted for simplicity.

10. (1.1) $C_{Q_i} = Y_i D_{ii} / \sum D_{ij}$ [final distribution function], where C_{Q_i} represents the use ("consumption") by Person i of the good Q ; Y_i is total compensation of person i ; D_{ii} is the significance of i to himself; $\sum D_{ij}$ is the significance to i of all persons.

(2.1) $C_{K_i} + C_{L_i} = Y_i D_{ii} / \sum D_{ij}$ [final distribution function], where C_{K_i} and C_{L_i} represent the use ("consumption") by i of the services of "human capital," L , and "nonhuman capital," K ; Y_i is total compensation of Person i ; D_{ii} is the significance of i to himself; $\sum D_{ij}$ is the significance to i of all persons.

11. For clarity and simplicity, we will define:

(1.5) and (2.5) $Y_i \equiv rK_i + wL_i$,

meaning that Y_i is the total factor compensation of Person i ; and

(1.6) and (2.6) $T_i \equiv (1 - Y_i) D_{ii} / \sum D_{ij}$.

By substituting (1.6) and (2.6), (1.1) and (2.1) may be restated as:

(1.1a) $C_{Q_i} = Y_i - T_i$ and

(2.1a) $C_{K_i} + C_{L_i} = Y_i - T_i$,

making clear that the difference between Person i 's total consumption, C_{Q_i} or $C_{K_i} + C_{L_i}$, and total compensation, Y_i , is equal to T_i —(net) personal, domestic, and political "transfer payments" from Person i to other persons.

By "net," I mean that personal gifts made are offset by gifts received, while taxes are treated as political transfers paid and balanced against political transfers received. Equations (1.1) and (2.1) are the simplest and most general forms of the final distribution function for an individual person. The refinements necessary to specifically describe gifts within marriage, from parents to children and vice versa, as well as accounting for taxes and government benefits, are considered below.

purposes or “ends” of our activity.¹² Scarcity implies both that, as the quantity of a good increases, the value of each additional unit declines¹³ and also that part or all of the goods produced are “used up”—that is, rendered unusable, by consumption.

3. *How (a): “Production.”* We produce such scarce goods by combining the useful services of people (“human capital”) and of property (“nonhuman capital”).¹⁴

4. *How (b): “Equilibrium” (Justice in Exchange).* The sale of each product provides the compensation of its producers: labor compensation for the workers and property compensation for the property owners.¹⁵ The income is thus wholly divided between labor and property compensation. In a competitive market, each factor is compensated in proportion to the share it contributes to the total value of the final product.¹⁶

C. Parenthesis: A Brief, Remedial History of Economics

Anyone trained in modern economics will instantly recognize the second, third, and fourth propositions, and their associ-

12. (1.2) $U_i = f(C_{Q_i})$ [utility function], where U_i (“utility”) is the order of preference of person i for units of his or her own consumption of the class of goods Q , C_{Q_i} .

(2.2) $U_i = f(C_{K_i}, C_{L_i})$ [utility function], where U_i is the ranking by Person i (“utility”) of units of C_{K_i} , and C_{L_i} the units consumed in use by person i of the services of nonhuman goods, K , and “human capital,” L , respectively. In reality, C_{K_i} and C_{L_i} are not two goods but two classes of goods consumed: (K_1, K_2, \dots, K_n) and (L_1, L_2, \dots, L_n) .

13. $\delta U_i / \delta C < 0$.

14. (1.3) $\Delta Q_i = f(K_i, L_i)$ [production function].

That is, Person i ’s production of Q is a function of his or her “nonhuman” (K_i) and “human capital” (L_i). As we will see, for the market economy as a whole, the two factors are combined in roughly constant proportions: $\Delta \Sigma Q_i = \Sigma K^a \Sigma L^{1-a}$, where a is the share of the total marginal product, $\Sigma \Delta Q_i$, contributed by all “nonhuman capital,” ΣK_i , and $1-a$ is the share contributed by all “human capital,” ΣL_i .

(2.3a) $\Delta K_i = f_1(K_i, L_i)$ [production function for “nonhuman capital”];

(2.3b) $\Delta L_i = f_2(K_i, L_i)$, [production function for “human capital”],

where ΔK_i is the change in the stock (production) of nonhuman goods, and ΔL_i is the change in the stock of “human capital,” owned by person i .

15. (1.4) $P_Q \Sigma \Delta Q_i = w \Sigma L_i + r \Sigma K_i$ [equilibrium condition], where P_Q is the price level (ideally corresponding to the GNP deflator), $\Sigma \Delta Q_i$ a measure of total output corresponding to real GNP, ΣL_i total hours worked in the labor market, w labor compensation per unit of L_i , and r the rate of return per unit of “nonhuman capital” K . $w \Sigma L_i$ is therefore total labor compensation, and $r \Sigma K_i$ total property compensation.

(2.4) $P_K \Delta K_i + P_L \Delta L_i = r K_i + w L_i$ [equilibrium condition], where P_K and P_L are the unit prices of K and L , respectively, w is labor compensation per unit of L , r is property compensation per unit of K . P_L is a market price only in a slave-owning society, like ancient Athens or the antebellum American South.

16. For example, $\delta \Sigma Q_i / \delta \Sigma L_i = w \Sigma L_i / P_Q \Sigma Q_i$ and $\delta \Sigma Q_i / \delta \Sigma K_i = r \Sigma K_i / P_Q \Sigma Q_i$.

ated mathematical descriptions, but not the first. Since the first element describes the economic theory of personal love and distributive justice, its absence explains why modern economists have such difficulty dealing with the large range of human activities that falls under both headings. A thorough historical account is beyond the scope of this paper,¹⁷ but a brief summary will help us understand the unsatisfactory state of economic theory regarding our topics of employment and fertility.

All four elements and their basic applications at the personal, domestic, and political levels were first integrated into a coherent framework by Thomas Aquinas in the 13th century. The theory of utility, which explains consumption, originated with St. Augustine; the theory of production using human and nonhuman factors originated with Aristotle; the theory of equilibrium originated with Aristotle (who called it “justice in exchange”);¹⁸ the theory of final distribution was first adequately stated, at the personal level, by Augustine and, at the social and political levels, by Aristotle (who called it “distributive justice”).¹⁹ This scholastic outline of economic theory was taught by Catholics and, after the Reformation, notwithstanding their other differences, Protestants alike from the 13th to the 18th centuries.

Adam Smith started the new phase of “classical” economics toward the end of the 18th century when he attempted to simplify the outline of economics by omitting the first and second elements: the theories of final distribution and utility.²⁰ Smith believed that the theory of utility could be dispensed with by adopting what is loosely, but somewhat inaccurately, known as the “labor theory of value.”²¹ Similarly, Smith dispensed with Augustine’s theory of personal distribution as early as his univer-

17. See, e.g., JOHN D. MUELLER, REDEEMING ECONOMICS: FREE MARKETS AND THE HUMAN PERSON (2006) (including a more detailed account of the history of economics, upon which this section relies).

18. See ARISTOTLE, THE NICOMACHEAN ETHICS, *supra* note 5, at 112–14.

19. See *id.* at 117–21.

20. This is despite having learned both theories from his teacher, Frances Hutcheson, and having taught the theory of utility in his college lectures for years after ridiculing it in his *Theory of Moral Sentiments*. See, e.g., MUELLER, *supra* note 17.

21. See 1 ADAM SMITH, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS 56–66 (Augustus M. Kelley ed., 1966) (1776); see also MUELLER, *supra* note 17. More accurately, what Smith did was to substitute a “one-factor” theory of production for the scholastic version, which always contained at least two factors. Smith’s economic theory, in his university lectures, was peculiar in containing only one factor of production, labor, and explaining only one kind of factor income, wages, thus replacing (1.3) with

(1.3 a) $\Delta Q_i = f_i(L_i)$,

sity lectures, by making an early version of the assertion that would become famous in *The Wealth of Nations*: “The brewer and the baker serve us not from benevolence, but from self love.”²² According to Augustine (and Aquinas following him), the main reason the hypothetical brewer or baker does not make gifts of bread or beer to his customers, rather than charging for them, is not exclusive self-love, but rather, the fact of scarcity: if he shared his beer or bread equally with everyone, he would leave himself and his family too little to live on. Exactly the same is true of our lemonade-producing children: they plan to donate at least part of their earnings to others, just not to their customers. Augustine, starting from Aristotle’s definition that love properly means willing some good to some person, observed that what it means to “love your neighbor as yourself” must therefore depend critically on whether the good in question is “diminished by being shared with others”²³—that is, scarce. When abundant or infinite goods are involved, sharing equally is always possible and, therefore, morally obligatory. But when scarce goods are involved, Augustine pointed out, loving your neighbor *as* yourself cannot mean loving your neighbor *equally with* yourself: “Since you cannot do good to all, you are to pay special regard to those who, by the accidents of time, or place, or circumstance, are brought into closer connection with you.”²⁴

ignoring “nonhuman capital” K . *The Wealth of Nations* represented an important advance of this scheme by attempting to account for three factors of production—labor (L), reproducible “nonhuman capital” (K_R), and land (K_T); but then, Smith reduced them back to one factor by further assuming that both K_R and K_T can be produced with labor (L) alone. This amounts to replacing equations (2.3a) and (2.3b) above with

$$(2.3c) \quad \Delta K_i = f_2(K_{Ri}, L_i, K_{Ti}),$$

$$(2.3d) \quad \Delta L_i = f_3(L_i) \text{ and}$$

$$(2.3e) \quad \Delta K_{Ti} = f_4(L_i).$$

Thus, any version of Smith’s production function is a linear function of labor alone, and every product’s price is a linear function of the quantity of the labor required to produce it. The same result could be reached by assuming that the three different factors are infinitely substitutable for each other. In the real world, this would mean that a worker could become a machine or chemical (or vice versa) at will. This assumption is empirically false, and omitting the utility function means that, while the theory could try to explain the quantity of a good produced, it could not even pretend to explain the quantity demanded. This combination of assumptions makes many of the theory’s predictions either empirically false or not testable.

22. ADAM SMITH, LECTURES ON JUSTICE, POLICE, REVENUE AND ARMS 169 (Edwin Cannan ed., 1896).

23. See AUGUSTINE, ON CHRISTIAN DOCTRINE, *supra* note 5, at 6.

24. See *id.* at 15 (“Further, all men are to be loved equally. But since you cannot do good to all, you are to pay special regard to those who, by the acci-

Augustine's theory explains why the brewer or baker shares his beer or bread with his family and friends but not with his business customers: he does indeed love his customers with a love of "benevolence" (that is, wishing good to them and thus treating them honestly) but not, as he loves his family and friends, with "beneficence" also ("doing good," by donating scarce goods to them).²⁵ Smith replaced Augustine's empirically verifiable theory of personal distribution with the mere assumption that no one ever shares his wealth with anyone else. And under this assumption, it is impossible to accurately describe any enterprise as simple as our children's lemonade stand.²⁶

Beginning around 1870, "neoclassical" economists, dissatisfied with various empirical failures of the classical framework, restored the theory of utility and reintegrated it with the theories of production and exchange; but so far, they have not rediscovered the theory of final distribution.²⁷ This is why, ever since, the last three elements have been the basic propositions of neoclassical economic theory.²⁸ They form the famous "scissors" to which Alfred Marshall likened the structure of economic theory: the theory of utility, representing the blade of demand; the theory of production, the blade of supply; and the theory of equilibrium, the rivet holding the two blades together.²⁹ But the missing first element is central to explaining the effects of fiscal policy on fertility and employment because it provides the description of all gifts and other "transfer payments," which neoclassical theory cannot explain except by treating them as disguised forms of consumption, production, and/or exchange.³⁰

Transfer payments comprise any income *not* received as compensation for contributing to current production. And since

dents of time, or place, or circumstance, are brought into closer connection with you.").

25. *See id.*

26. Eliminating the final distribution function [equations (1.1) and (2.1)] altogether would make Smith's system even less logically complete, with two fewer explanatory equations than unknown variables. But in practice, Smith implicitly added the restriction, $D_{ii}/\sum D_{ij} = 1$, collapsing the equations to:

(1.1) $C_{Qi} = Y_i$ and

(2.1) $C_{Ki} + C_{Li} = Y_i$,

which means that no one shares any wealth or income with anyone else. The actual preferences of the people whose behavior is supposed to be described are replaced with an assumption that is often (perhaps usually) false. The logic of the system would require, for example, that every child beget and rear itself. *See generally* SMITH, *supra* note 21.

27. *See* MUELLER, *supra* note 17.

28. *See id.*

29. *See id.*

30. *See id.*

by nature we humans are (as Aristotle observed) not only “rational,” but also “conjugal”³¹ and “political,”³² animals, it still makes eminent sense to describe these transfers as being of three kinds: personal, domestic, and political.

1. Personal Gifts (and Crimes)

At the personal level, transfer payments include the gifts of their scarce resources that people make to one another, while crimes depriving others of life or property amount to involuntary transfer payments from the victim to the criminal.³³ The most fundamental example of personal gifts comprises the gifts a man and a woman make when they marry, establishing their household.³⁴ Thus, the household and its property are essentially built

31. See THOMAS AQUINAS, COMMENTARY ON ARISTOTLE’S NICOMACHEAN ETHICS 520 (C.I. Litzinger, O.P. ed., Dumb Ox Books 1993) (c. 1271).

32. ARISTOTLE, THE NICOMACHEAN ETHICS, *supra* note 5, at 238.

33. See generally *supra* notes 15, 26 and accompanying text (describing equations (1.4) and (2.4)).

34. ARISTOTLE, THE NICOMACHEAN ETHICS, *supra* note 5, at 214. Aristotle states:

Between man and wife friendship seems to exist by nature; for man is naturally inclined to form couples—even more than to form cities, inasmuch as the household is earlier and more necessary than the city, and reproduction is more common to man with the animals. With the other animals the union only extends to this point, but human beings live together not only for the sake of reproduction but also for the various purposes of life; for from the start the functions are divided, and those of the man and woman are different; so they help each other by throwing their peculiar gifts into the common stock.

Id. Thus, Aristotle notes that a household, say, J_1 , is created by the marriage of a man, M_1 , and a woman, F_1 , and its wealth, W_{J_1} , is initially acquired by their “throwing their peculiar gifts into the common stock” of household wealth: $W_{J_1} = K_{M_1} + K_{F_1} + L_{M_1} + L_{F_1}$. This is more than the tautology that would result from aggregating the possessions of any two random individuals. It means that each spouse, M_1 and F_1 , starts marriage with an initial gift or transfer, $T_{M_1:J_1}$ and $T_{F_1:J_1}$, to the new joint family partnership, J_1 , consisting of all his or her human and nonhuman wealth:

$$(1.6a) \quad T_{M_1:J_1} = K_{M_1} + L_{M_1}.$$

$$(1.6b) \quad T_{F_1:J_1} = K_{F_1} + L_{F_1}.$$

For the marriage partnership to continue and flourish, the initial gifts must be followed by a series of gifts by which any new income realized separately by each spouse (particularly from their “human capital,” since it is not alienable) is put into the “common stock”:

$$(1.6c) \quad T_{M_1:J_1} = Y_{M_1}, \text{ and}$$

$$(1.6d) \quad T_{F_1:J_1} = Y_{F_1}.$$

Henceforth, the married couple determines the distribution of the family’s income or wealth according to a new joint family distribution function, D_{J_1} . For example, the woman’s share in the use of total current family income becomes:

$$(1.1b) \quad C_{QF_1} = Y_{J_1} D_{J_1:F_1} / \Sigma D_{J_1:i}, \text{ and}$$

$$(2.1b) \quad C_{RF_1} + C_{LF_1} = Y_{J_1} D_{J_1:F_1} / \Sigma D_{J_1:i}.$$

around the relationship between a man and a woman,³⁵ which normally produces children.³⁶ If the last part of the definition ever stopped being true, all households and persons would cease to exist within a single human lifetime.

2. Domestic “Distributive Justice”

At the domestic level, “transfers” include the gifts that parents jointly make to their children (for example, by paying for their living and education expenses before they can support themselves),³⁷ or conversely, the gifts that adult children make to

A similar formula applies to every other family member—and, in fact, to everyone else in the world, for most of whom the distributive share in the family’s resources is zero.

35. See ARISTOTLE, THE NICOMACHEAN ETHICS, *supra* note 5, at 214. Aristotle declared:

It is for these reasons that both utility and pleasure seem to be found in this kind of friendship. But this friendship may be based also on virtue, if the parties are good; for each has its own virtue and they will delight in the fact. And children seem to be a bond of union (which is the reason why childless people part more easily); for children are a good common to both and what is common holds them together.

Id. Following Aristotle, Augustine later boiled down the essentials of marriage to two—faithful partnership and offspring—with the addition of a third, sacrament, for baptized Christians:

Therefore the good of marriage throughout all nations and all men stands in the occasion of begetting, and faith of chastity: but so far as it pertains unto the People of God, also in the sanctity of the Sacrament. . . . All these are goods, on account of which marriage is a good: offspring (*proles*), faith (*fides*), sacrament (*sacramentum*).

AUGUSTINE OF HIPPO, OF THE GOOD OF MARRIAGE (DE BONO CONJUGALI), *available at* <http://www.newadvent.org/fathers/1309.htm> (last visited Mar. 22, 2006).

36. This gives us the “original” production function for children, who are each unique and uniquely related to their biological parents. For example, the initial human capital endowment (L^*) of a boy, M_2 , whose biological father is M_1 and whose biological mother is F_1 , may be written:

$$(2.3g) L^*_{M_2} = f(L_{M_1}, L_{F_1}, K_i).$$

In other words, though the “nonhuman capital” that is necessary to bring a son, M_2 , into being does not have to belong to its biological parents, the “human capital” does. Once the child is in the world, many other persons, besides its parents, can and do make additions to this initial endowment, as described by the general “production function” for “human capital” (2.3b). Yet, it remains true that, until the child becomes an adult, the bulk of such investments are typically made by or at the direction of the child’s biological parents.

37. For example,

$$(1.6e) \text{ and } (2.6e) T_{J_1:M_2} = (1 - Y_{J_1}) D_{J_1:M_2} / SD_{J_1:i},$$

which means that the gift or transfer from the parents, J_1 , to dependent son, M_2 , is determined by his relative significance, $D_{J_1:M_2} / SD_{J_1:i}$, out of his parents’ total distributed income, Y_{J_1} .

support aged parents.³⁸ And because (especially in the last century) some of the ancient household's functions have been increasingly specialized by its modern offshoots, the modern household, the business firm and nonprofit foundation, "domestic" transfers now also include benefits paid by business firms to former, retired, or disabled workers and their dependents, as well as payments made by persons to charitable foundations and the grants made to recipients by such foundations on behalf of those donors.

3. Political "Distributive Justice"

At the political level, transfer payments include government benefits and taxes (the latter amounting to transfers from the taxpayer to the "common wealth").³⁹ Our analysis, therefore, requires us to rewrite the account, as necessary, in order to suit the particular agent in question: an individual person, a married couple, a family with children, or a government.⁴⁰ But whatever

38. (1.6f) and (2.6f) $T_{M2;J1} = (1 - Y_{M2}) D_{M2;J1} / SD_{M2;i}$, which means that the gift or transfer from (now adult) son, M_2 , to the parents, J_1 , $T_{M2;J1}$, is determined by their relative significance, $D_{M2;J1} / SD_{M2;i}$, out of all the people among whom the son distributes his income, Y_{M2} . We note that the son's gift at time t_n yields a quasi-rate of return on the parents' gift to the son at time t_0 equal to $(T_{M2;J1(t_0)} / T_{M2;J1(t_n)})^{1/n} - 1$.

39. By including typical taxes and government transfer payments, (1.1) and (2.1) become

(1.1b) and (2.1b), $C_{Qi} = D_{ii}(1-\tau)[(1-p)wL_i + (1-\tau)(1-k)rK_i + T_i] / P_Q D_{ij}$, where C_{Qi} is person i 's consumption of economic goods (Q), of which the price is P , $T_{G1;i}$ is net government transfer payments received by person i , τ is the income tax rate, p is the payroll tax rate and k is the tax rate on property income. D_{ii} is the significance of person i to himself or herself, and ΣD_{ij} is the significance of all persons to person i , including himself or herself.

For realism and simplicity, we should also redefine Y_i as person i 's disposable (rather than gross) income:

(1.5a) and (2.5a) $y_i \equiv (1-t)[(1-p)wL_i + (1-t)(1-k)rK_i + T_i] / P$, thus preserving the essential simplicity of:

(1.1) $C_{Qi} = Y_i D_{ii} / \Sigma D_{ij}$ and

(2.1) $C_{K_i} + C_{L_i} = Y_i D_{ii} / \Sigma D_{ij}$.

40. Apart from debt service, government outlays are devoted to current consumption of goods and services, investment, and transfer payments, while cash flow includes tax receipts (which consist, in the U.S., chiefly of the personal and corporate income taxes and the payroll tax) borrowing and creation of fiat money:

(1.7) and (2.7) $C_{KG} + \Delta K_G + T_L + T_K = t(w\Sigma L + \Sigma K) + pw\Sigma L + kr\Sigma K + \Delta B_G + \Sigma K_{GMi}$ [government budget],

where C_G is current consumption (including capital consumption) of government goods and services, T_L is government transfer payments to persons, T_K is government subsidies to property-owners, t is the income tax rate (assumed to be equal for labor and property income), p is the payroll tax rate, and k is the

the change in details, all four elements remain necessary for an accurate and complete account.

This brief discussion helps us to understand the confusion of most political debate. There are two kinds of justice: justice in exchange, which concerns private personal wealth, and distributive justice, which concerns common wealth. In general, libertarians attempt to shrink justice to justice in exchange alone—as if all goods were private goods—while liberals or collectivists attempt to shrink all justice to distributive justice alone—as if all goods were common goods. In reality, the choice is never either/or, but always both/and, by virtue of the fact that both private and common goods exist.

III. FISCAL POLICY AND (UN)EMPLOYMENT

As already noted, it is possible to proceed almost directly from our simple model to a comprehensive discussion of employment at the national level because we are not attempting, at this point, to explain the growth of the population or the economy, but only the shares of the population that are either employed in various capacities or unemployed. To make our discussion truly comprehensive, we must account for everyone who could possibly be employed or unemployed. Practically speaking, this means all adults, now defined as everyone sixteen years and older. (Before 1947, the definition included those fourteen

tax rate levied only on property income. B_G is government debt, and $\Sigma \Delta K_{Gmi}$ is the issue of government fiat money.

Exactly as with personal love and domestic distributive justice, the distribution of a government's common wealth is determined by the relative significance of the persons. For example,

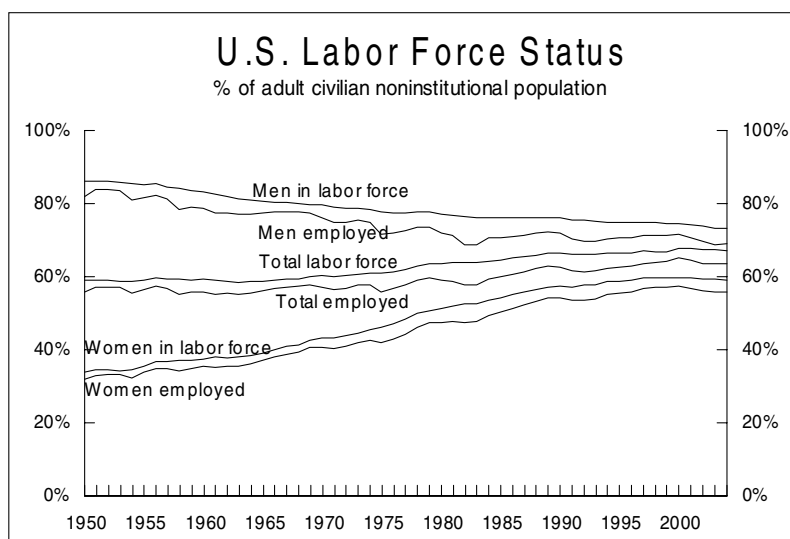
$$(1.6g \text{ and } 2.6g) T_{Li} = (1 - Y_{G1}) D_{G1i} / SD_{G1j}$$

That is, a transfer payment from a government, $G1$, to person i , T_{Li} , is determined by that person's significance relative to all persons who share in the distribution of such transfers.

We note that, as in the case of transfers between parents and children, the implicit rate of return on payroll taxes paid at time t_0 , $pwL_{(t_0)}$, that fund pay-as-you-go transfer payments to persons received at time t_n , $T_{L(m)}$, is $(T_{L(m)} / pwL_{(t_0)})^{1/n} - 1$.

The substance of the concluding recommendations is that, to maximize both fairness and economic efficiency, the sources and uses of government funds should be paired in this way: transfer payments to persons should be funded by payroll taxes, subsidies to property owners by taxes on property income, general consumption of government-provided goods and services by an income tax falling equally on labor and property income, borrowing should be confined to funding investment in government-owned assets, and none of these activities should be funded by fiat money creation. (That is, $\Sigma T_{Li} = pw\Sigma L_i$, $\Sigma T_{Ki} = kr\Sigma K_i$, $\Sigma C_{Rgi} = (w\Sigma L_i + r\Sigma K_i)$, $\Sigma \Delta B_{Gi} = \Sigma \Delta K_G$, and $\Sigma \Delta K_{Gmi} = 0$.)

years and older.⁴¹) And the first practical distinction we must draw is between those in the labor market and those outside the labor market, often erroneously described as those “working” or “not working.” We have avoided this error by noting, from the beginning, that a great deal of work and production occurs outside the market. At one time, nearly all work and production occurred outside the market, and even today, the production of many goods, as well as of people, occurs within the household. So, it is more accurate and fruitful to distinguish between those working in the labor market and those working outside the labor market in the household economy. We can exhaustively describe all adults in the labor market as being either employed civilians, employed in the military, or unemployed:



We find that we have two basic facts to explain. First, what accounts for the unemployment rate, both as a share of the civilian labor force and as a share of the total adult population? Second, what accounts for people’s decision to participate in the labor market and, particularly, the increased share of the adult population in the labor market since the Second World War? A closer look reveals a further complication: the labor market employment of men has steadily declined, while the labor market employment of women has steadily increased. So the rising employment/population ratio has resulted from the share of

41. See U.S. DEP’T OF COMMERCE, HISTORICAL STATISTICS OF THE UNITED STATES 121–26 (1975).

adult women employed in the labor market having risen by more than the labor market employment of men has declined.

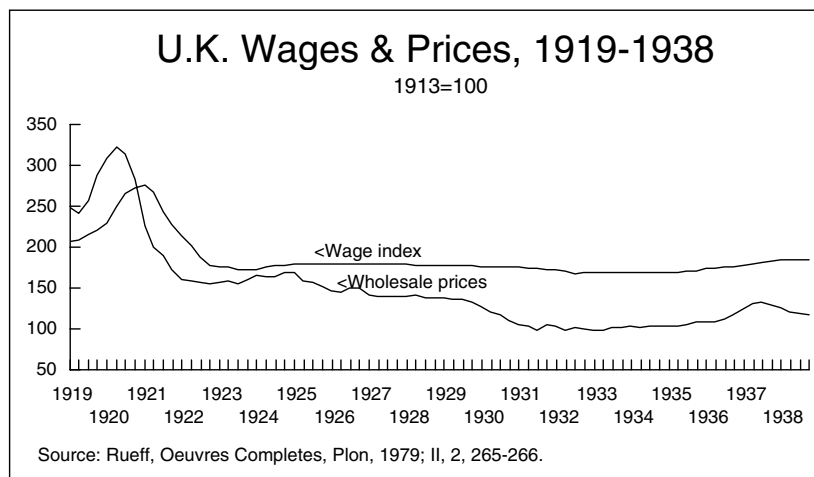
If we can account for both facts, we will have explained the variation in the (generally increasing) share of the adult population, employed in the labor market, and the (generally declining) share, outside the labor market. Let us deal with the problem of unemployment first.

A. *Unemployment as Disequilibrium: Rueff's Law*

Our earlier discussion (for example, when we spoke of the equality of product value and the compensation of the producers or “factors”) assumed ongoing adjustments to changing market conditions, resulting in a continuous approximation of market “equilibrium.” But unemployment is a case of market *dis*-equilibrium. That is, when we say that a certain percentage of the civilian labor force is currently unemployed, it means that that proportion of workers is actively seeking a job in the labor market but unable to find employment at the prevailing level of labor compensation. The quantity of labor offered by workers exceeds the quantity demanded by business firms in that proportion.

The French economist Jacques Rueff was the first to demonstrate empirically that variations in unemployment are closely linked to the relative price of labor and offer an explanation for its variation. The relation between the two was found to be so strong that it became known in the 1930s and 1940s as “Rueff’s Law.” In *Les Variations du Chômage en Angleterre* [*Variations in Unemployment in England*] Rueff showed that the reason for the unprecedented appearance of chronically high unemployment in England in the 1920s was a rise in the relative price of labor, which he measured by the ratio of wage rates to the wholesale price index.⁴² He traced its cause to the combination of an unemployment “dole” (instituted in 1911) which was fixed in nominal terms (that is, so many shillings a week) and a sharp post-World War I decline in the price level (the deflation resulted from Britain’s decision to return to the gold standard at the pound’s pre-war gold value, despite more than a doubling of the general price level due to wartime monetary inflation).

42. Jacques Rueff, *Les Variations du Chômage en Angleterre*, 32 REV. POLITIQUE ET PARLEMENTAIRE 425 (1925) [hereinafter *Les Variations*].



Rueff's study first appeared in a French academic journal, and was described in the *Financial Times* in 1926, but it caused a sensation when an updated version was reported upon in London's *Times* in 1931, just after British unemployment had risen most sharply. Following Rueff's lead, other researchers found a similarly strong relationship between the relative price of labor and unemployment in at least a dozen other countries.⁴³ John Maynard Keynes's *General Theory* implicitly depends on Rueff's Law, plus the additional assumption that wage rates are fixed in nominal but not real terms.⁴⁴ "The astonishing thing is not that this relationship exists," Rueff modestly remarked in his memoirs, "but that it should astonish anyone."⁴⁵

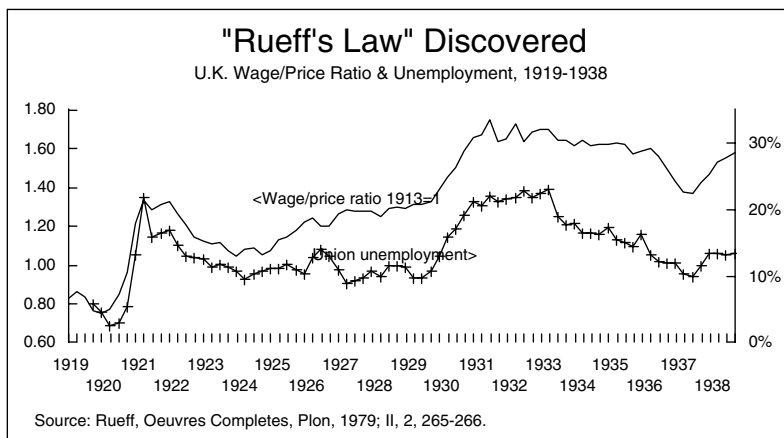
43. Jean Denuc, *Les Fluctuations Comparées du Chômage et des Salaires dans Quelques Pays de 1919 à 1929* [*Comparative Fluctuations in Unemployment and Salaries in Several Countries from 1919 to 1929*], BULLETIN DE LA STATISTIQUE GÉNÉRALE DE LA FRANCE (1930) (Fr.).

44. Keynes cited Rueff's wage/price calculations to support his assumption of downward "stickiness" of wages:

Yet it might be a provisional assumption of a rigidity of money-wages, rather than of real wages, which would bring our theory nearest to the facts. For example, money-wages in Great Britain during the turmoil and uncertainty and wide price fluctuations of the decade 1924-1934 were stable within a range of 6 per cent., whereas real wages fluctuated by more than 20 per cent.

JOHN MAYNARD KEYNES, *THE GENERAL THEORY OF EMPLOYMENT INTEREST AND MONEY* 276 (1936). But while adopting downward "stickiness" of wages as a general assumption, Keynes did not acknowledge Rueff's explanation for it: the unemployment "dole," which, at the time (like chronic unemployment), was almost unique to the United Kingdom.

45. 1 JACQUES RUEFF, *OEUVRES COMPLÈTES* [COMPLETE WORKS] 96 (1977).



Rueff's original study was published six months before Irving Fisher, the great American economist, published what would later be called a "Phillips Curve" explanation of unemployment.⁴⁶ Whereas Rueff explained joblessness as a function of the relative *price* of labor, Fisher (like Phillips after him) explained unemployment as a function of the rate of *price inflation*. The Phillips Curve relationship seemed to work for about a decade after it was announced, but broke down when the Bretton Woods monetary system exploded in 1971, resulting in both higher inflation and higher unemployment. But as we will see, Rueff's Law, suitably updated, has held up empirically. The necessary updating takes advantage of the greater detail of national income data now available, and takes into account taxes and transfer payments—which are no longer small enough to be ignored—when measuring the relative price of labor.

B. *Rueff's Law Forgotten and Rediscovered*

Rueff's Law was almost universally forgotten by economists after World War II. I was intrigued by its apparent success before, and puzzled by its apparent disappearance after, the Second World War, but did not get the opportunity to investigate the reasons until my forecasting firm was hired to analyze the economic policies of various governments that were wrestling with apparently intractable problems of unemployment (the first such study was commissioned by a French non-profit foundation

46. See Irving Fisher, *A Statistical Relation Between Unemployment and Price Changes*, INT'L LAB. REV. (1926). A.W. Phillips was a British economist who in the late 1950s discovered an apparent tradeoff between inflation and unemployment.

which was advising the “transition team” of Edouard Balladur, who was elected prime minister of France in 1993).

My research found that Rueff’s Law is very much alive, and explains the variations of unemployment in economies as large as the United States and as small as Puerto Rico—but that its measurement needed to be updated. The updating of Rueff’s Law involves two modifications, not in theory but in the technique of measurement. Both modifications were suggested by Rueff, but they could not have been accomplished with the statistics available to economists and policymakers before the Second World War. The first modification is to use a truly comprehensive measure of the cost of labor, by adjusting the average rate of labor compensation for both product prices and labor productivity (instead of adjusting for product prices alone). Rueff had carefully noted that the relation between real wages and unemployment “can be maintained only during sufficiently short periods and absent major changes in technology or working conditions.”⁴⁷ The second necessary modification is to adjust labor costs for the effects of government taxes and “transfer payments” (such as the unemployment benefits upon which Rueff had focused).⁴⁸

To understand Rueff’s Law, we must draw out the underlying relationships implied in our general discussion. Our discussion implies that unemployment is a direct function of the “price” of labor. But what, exactly, *is* the relative price of labor? Obviously it has to do with the level of labor compensation. But like all prices, labor compensation has a meaning only in relation to other prices. From the point of view of a worker, whether a wage of five dollars an hour is decent or lousy depends, for example, on whether a glass of lemonade costs five dollars or twenty-five cents. And for the prospective employer, whether it is profitable to employ a worker to produce the lemonade will also depend on whether the glass of lemonade can be sold for five dollars or twenty-five cents. So the relative price of labor has to take both pay and prices into account. But the cost of labor is also affected by labor productivity. If a business firm could double the quantity of goods produced with an hour of labor while wage rates and prices remained the same, it would effectively cut the cost of labor in half. But in a competitive market, all units of labor (and capital) are paid incomes equal to what

47. 2 JACQUES RUEFF, *L’Assurance-Chômage: Cause du Chômage Permanent* [*Unemployment Insurance: Cause of Permanent Unemployment*], in *OEVRES COMPLÈTES* 211 (1977).

48. See Rueff, *Les Variations*, *supra* note 42; see also *infra* note 53, MUELLER 1994a at 7; MUELLER 1994b at 3, 17.

the last unit adds to output. If labor productivity suddenly doubled while product prices stayed the same, businesses would find that to take full advantage of the change, that is, maximize their profits, they would need to keep hiring more workers until real wage rates doubled, at which point the relative price of labor would have risen back to its initial level.

To a prospective employer, therefore, the effective “price” of labor is the labor compensation or wage agreed with the worker, adjusted for two things: the selling price of the finished product and the worker’s productivity. This is sometimes called the “efficiency wage.” The higher the efficiency wage, the lower the demand for workers; the lower the efficiency wage, the higher the demand to hire employees.

C. *From Lemonade to the National Income and Product Accounts*

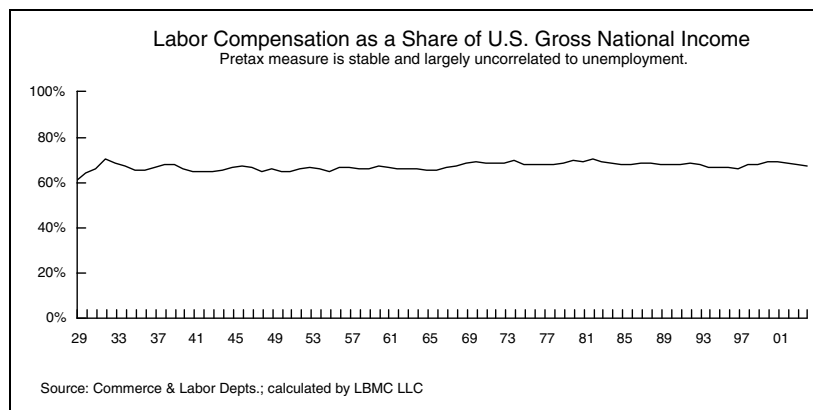
What is true of the purchase of a single product from a single firm remains true if we add up all the purchases of all products from all firms: namely, total factor compensation is equal to total spending on final products. This means that, just as we could view the purchase of lemonade either as spending on a product or as compensation to its producers, we can view the whole economy either as total spending on final products or as the total income of their producers.⁴⁹ The national income and product accounts attempt to add up all individual transactions as total spending on final products (gross domestic or national product: GDP or GNP) and as total labor and property compensation received by producers (gross domestic or national income: GDI or GNI).⁵⁰

Looking at the income side, considered before the effect of taxes and government benefits, about two-thirds of Gross National Income (the counterpart to Gross National Product, or GNP) consists of labor compensation (wages, salaries, and fringe benefits), while about one-third is property compensation (divi-

49. National income and product data pertain only to “final” products, since including the value of raw materials and intermediate goods, as well as finished goods, would result in multiple counting of the same “value added” in production.

50. “National” refers to the production actually owned and received as income by a country’s residents, while “domestic” refers to the income generated by production *within* a country, without regard to whether the income is ultimately received by residents or by foreigners. If our purpose is to maximize the incomes of the country’s residents, then the appropriate measures are gross or net *national* product (GNP or NNP) and their counterparts, gross or net *national* income (GNI or NNI). “Gross” means before, and “net” means after, subtracting the value of capital consumed in production, as well as indirect (sales) taxes.

dends, retained profits, interest, rents, and royalties). The graph “Labor Compensation as a Share of U.S. Gross National Income” shows this relationship.



In doing the calculations for the whole national economy, we discover that the relative price of labor or “efficiency wage” is the same as the *share of labor compensation in total national income*.⁵¹ This is a great convenience in calculation, since it means that we can measure the economy-wide relative price of labor without actually knowing the average hourly wage rate, the number of hours worked, the level of productivity, or total real output: all we need to know are total labor compensation and total national income.

Before taxes and government benefits, gross labor compensation typically makes up about two-thirds, and property compensation about one-third, of gross national income, and those shares are remarkably constant over time. We noted that this is presumably because workers consistently contribute about two-thirds and productive property about one-third the value of gross

51. Why is this? The relative price of labor is derived by dividing the rate of labor compensation per hour by both product prices and labor productivity. Let w be labor compensation per hour, L the number of hours worked, P the index of product prices, and Q net output. Then the “product wage” is w/P , and labor productivity (output per hour) is Q/L . So the relative price of labor is $(w/P)/(Q/L) = wL/PQ$. But wL is total labor compensation, and PQ is the value of total output. PQ (net of nonhuman capital consumption and indirect taxes) is also equal to national income. Therefore the relative price of labor is the same as labor’s share of national income. As long as we know the aggregate value of labor compensation (wL) and national income (PQ), we can measure the relative price of labor without actually knowing w , L , P , or Q .

output.⁵² While this gives us a comprehensive overview of labor costs, the income shares calculated in this way do not have a particularly close correlation with the unemployment rate. This is because the cost of labor has been calculated without taking into account three important realities: taxes, transfer payments, and capital consumption. In particular, taxes and benefits must be included because they affect people's behavior. Perhaps ignoring them might have been justifiable seventy or eighty years ago, when both were relatively small in relation to the total economy. But today we cannot ignore all the taxes and subsidies, which are specifically designed to affect behavior and transfer income between and among workers and owners of productive property.

D. Parental "Economic Policy" and the Lemonade Stand

To understand the effects of fiscal policy on (un)employment—we must return to our analogy of the lemonade stand and put ourselves in the place of the children's parents, who, after observing the children's efforts, decide to help them without taking over the operation of their lemonade stand (which would be equivalent to its "nationalization" by the government).

1. Price Regulation

The quantity of a product demanded by customers, we concluded, diminishes as the price increases, and there is generally only one price at which the quantity demanded equals the quantity supplied. What would happen if the parents overruled the children about the price at which they had decided to sell their lemonade—say, telling them they must sell lemonade for fifty, rather than twenty-five cents a glass? This is essentially what the government does when it attempts to regulate the prices of products. If the selling price were already at the level at which the quantity of lemonade demanded just equaled the quantity offered for sale, raising the selling price would cause the quantity demanded to fall short of the quantity supplied, thus creating an unsellable surplus of lemonade. Likewise, lowering the selling price below the "equilibrium" price would increase the quantity demanded, but not the quantity supplied, thus creating a shortage of lemonade. In both cases, the amount actually sold would not be equal to the amount demanded, but rather the *lesser* of the quantity supplied and the quantity demanded. The

52. $\Sigma Q = \Sigma K^a \Sigma L^{1-a}$, where a is the share of total product value contributed by all nonhuman capital ΣK , and $1-a$ the share contributed by all human capital ΣL ; empirically, $a \cong 0.3-0.4$, so $1-a \cong 0.6-0.7$.

same principle explains why government price controls, if enforced, always cause either a shortage or a surplus in a competitive market. Below-market rent controls create a housing shortage, below-market interest ceilings a credit shortage, and below-market gasoline price controls a gasoline shortage.

2. Regulation of Compensation

Since the compensation is ultimately determined by the product's price, similar effects occur when the government attempts to set the rates of compensation of the productive factors as when product prices are directly controlled: that is, a surplus or shortage of the factor results. The most important example of a regulatory control on factor compensation is the minimum wage. This would be like the parents insisting that the child who supplied only labor be compensated at a certain rate per hour. If the minimum rate is set at a relatively low level, say one dollar an hour when the children's analysis had indicated the rate should be at two dollars an hour out of revenues of three dollars an hour, the regulation has no effect. But if the rate were set above the level that would equalize the demand for and supply of labor—say three dollars an hour—labor compensation would absorb all revenues, causing the child "proprietor" to take all the property home. The result would be a labor surplus—in other words, unemployment—but without providing any alternate source of income to the worker, who would be unemployed as a result. The minimum wage makes it illegal, in effect, to hire unskilled workers at what their skills are currently worth, and thus improve their skills and earn a higher wage. So they remain unemployed and unskilled. By removing the unskilled from the labor market, the minimum wage may raise the wages of skilled workers (which is probably why it is championed by labor unions) but reduces the income of all workers as a group.

3. Product Subsidies

Government subsidies or benefits paid to producers can also create shortages or surpluses, but with an important difference compared with price controls. In this case, the surplus created by an above-market price is purchased by the government—rather like parents who insist that the children set the price of lemonade higher (say, fifty cents a glass when most customers are willing to pay only twenty-five cents), but offer to buy any lemonade that remained unsold at that price. That way, the children's income would be increased at the expense of the parents. However, the benefit or subsidy would also encourage the children to

produce more lemonade to increase their incomes, thus making it potentially very expensive to the parent.

In the same way, farm price supports increase farmers' incomes, but also create government-owned "lakes" of milk or wine and "mountains" of unsold butter, cheese, cotton, sugar, and wheat. The surplus products cannot be sold by the government without driving the market price below the level which it is the whole point of the policy to support. To avoid this, an alternative method might be to offer to pay the children twenty-five cents for every glass they manage to sell at any price. The subsidy might induce the children to make so much more lemonade that they had to lower the price to customers to ten cents a glass to sell it all, but the children would receive thirty-five cents a glass. (However, this would undercut the price of any other lemonade stands in the vicinity.)

4. Transfer Payments to Persons

Something analogous to government subsidies for products happens in the labor market when the government offers "transfer payments" to workers. But the economic consequences depend largely upon conditions on which the payments are granted. And transfer payments involve basically three kinds of conditions, with three different results on the employment and income of workers. The first category requires people to be in the labor force but be unemployed to qualify. This would be like the children's parents offering to pay the child "worker" whenever he was not working at the lemonade stand, but at a rate near what the child could earn by so working. This category includes unemployment insurance and welfare payments to the able-bodied that, after paying costs of commuting, etc., exceed the value of labor compensation available from a private job. Just as a product subsidized at an above-market price causes the government to purchase the surplus that customers are unwilling to buy, the result of unemployment insurance or welfare to the able-bodied is a surplus of labor that cannot be sold to private employers at the going wage, but which the government, in effect, chooses to purchase at a higher rate. The result is a reduction in market employment and an equal increase in unemployment. The second category requires the recipient to be outside the labor force. Such benefits include pay-as-you-go pensions conditioned on retiring from the labor force, as well as disability insurance, which also requires the recipient to be fully or partially disabled from working. This would be like the children's parents offering to pay them, say, to do their homework instead of running the lemonade stand. The result may be a

reduction in labor market employment, but not an increase in unemployment, since to receive the benefit, the recipients must leave the labor force. The third category requires the recipient to be employed. This category includes an Earned Income Tax Credit or “workfare.” Such benefits are analogous to an arrangement by which one of the parents donated part of his or her own salary to pay the child “worker” an extra dollar an hour in addition to any compensation the child derived from making and selling lemonade. This kind of benefit neither reduces employment nor increases unemployment of the recipients. Instead, income is transferred from employed workers with higher incomes to employed workers with lower incomes.

Thus the problem of unemployment is inextricably linked to the question of the overall distribution of income between workers and property owners—and particularly to the policies adopted by modern governments to affect that distribution. The updated version of Rueff’s Law sheds a great deal of light in pinpointing which social policies, ostensibly intended to help the poor and particularly low-income workers, actually do so—and which policies actually worsen the situation of those they are supposed to help. I summarized my findings about Rueff’s Law in a series of reports, which tested the predictions of the earlier studies against the actual results of U.S. welfare reform.⁵³

To calculate the relative price of labor accurately, we must therefore make three adjustments.

First, taxes on workers should be subtracted from net labor compensation (just as taxes on property income must be subtracted from net property compensation). Second, transfer payments to persons add to the net cost of labor compensation (since the payments are not received by owners of property), while any subsidies to property owners should be added to net property compensation. Third, capital consumption must be subtracted, because using up wealth requires investing current income to replace it. Subtracting capital consumption (and sales

53. See JOHN MUELLER, THE LBMC REPORT, A CHALLENGE TO CONVENTIONAL LABOR-MARKET WISDOM (May 1994), available at http://www.eppc.org/docLib/20050922_achallegetoconventional.pdf; JOHN MUELLER, THE LBMC REPORT, HOW CAN WAGES FALL WHILE UNEMPLOYMENT RISES? (Mar. 1994), available at http://www.eppc.org/docLib/20050922_howcanwagesfall.pdf; JOHN D. MUELLER, THE LBMC REPORT, TRANSFER PAYMENTS: CAUSE OF PERMANENT UNEMPLOYMENT (May 1993); JOHN D. MUELLER, THE LBMC REPORT, THE ANSWER TO THREE PUZZLES: WELFARE REFORM LOWERED UNEMPLOYMENT (July 1999), available at http://www.eppc.org/publications/pubID.2367/pub_detail.asp.

taxes) from gross national income (GNI) leaves net national income (NNI).⁵⁴

In other words, though net income is originally produced and earned by two factors—workers and owners of productive property—the income is finally split three ways: part goes to workers as take-home pay after taxes and transfers to employed workers; part goes to property owners as property compensation after taxes and subsidies; and part is transferred to persons who do not contribute to current output, as “transfer payments.” Under these circumstances, the net cost of labor is no longer the share of income actually received by employed workers, but rather the share of total net income *not* received by owners of property—which is equal to take-home pay plus net transfer payments to persons.⁵⁵

To estimate the relative price of labor on this basis, I went to the national income and product accounts, and calculated pretax labor compensation (including fringe benefits and the government’s estimate of self-employed labor income, which had to be reconstructed before 1947), plus after-tax transfer payments to persons, minus personal and payroll taxes on labor compensation.

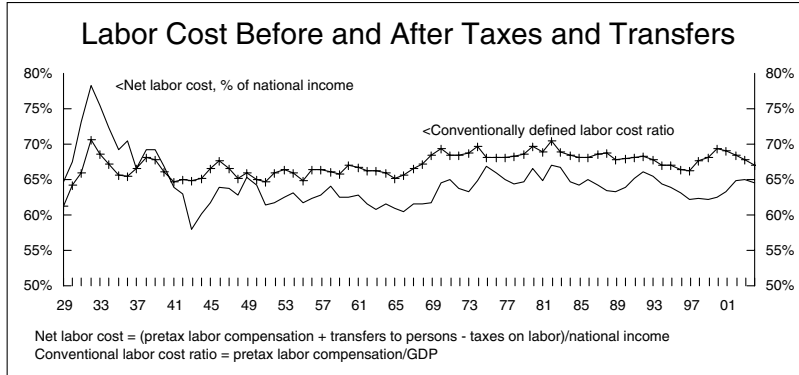
Including taxes and government transfer payments reveals that the actual change in workers’ take-home pay as a share of national income is often quite different from the share as conventionally calculated without the adjustments.⁵⁶ For example, take-home pay rose from 2000 to 2004 as a share of national income while the conventional calculation showed the labor share declining—a fact which was made the basis of much ill-

54. However, as noted above, the government calculates the consumption of nonhuman but not human capital, which is equally real.

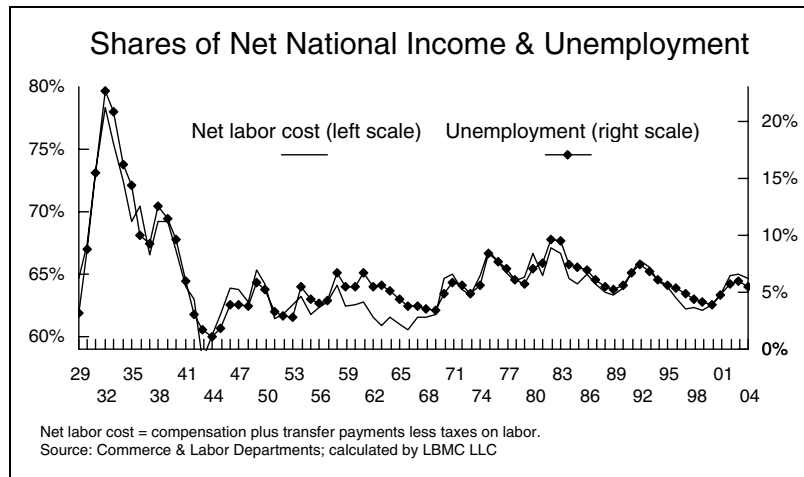
55. $L/L_{pot} = c_1 + b(1-\tau)[(1-p)wL+T_L]/(PQ-C_k)$; that is, employment as a share of the labor force is a function of labor’s net share of national income, where c_1 is a constant, L is actual employment, and L_{pot} is the labor force (maximum potential employment), so $L_{pot} - L$ is the number of (hours or workers) unemployed and $(L_{pot} - L)/L_{pot}$ is the unemployment rate. When unemployment is eliminated, $L=L_{pot}$. Since actual employment can never exceed potential employment, and actual employment is a function of labor’s share of total income, labor’s net share of total income can never fall below $1-a \cong 0.6-0.7$. No matter how “greedy” employers are, their greed will cause them to hire workers, thus raising workers’ incomes, as long as it is profitable to do so. It stops being profitable when $L=L_{pot}$.

56. See, e.g., PAUL GOMME & PETER RUPERT, FED. RESERVE BANK OF CLEVELAND, MEASURING LABOR’S SHARE OF INCOME (2004), available at <http://www.clevelandfed.org/Research/PolicyDis/No7Nov04.pdf>; Michael R. Pakko, *Labor’s Share*, NAT’L ECON. TRENDS, Aug. 2004, available at <http://research.stlouisfed.org/publications/net/20040801/cover.pdf>.

informed controversy and many well-intended but misguided policy recommendations.



Moreover, unlike the gross measure, the net cost of labor calculated in this way is highly correlated with the unemployment rate. The following chart shows the relationship for the United States since 1929 (the earliest year for which sufficiently detailed statistics are available).

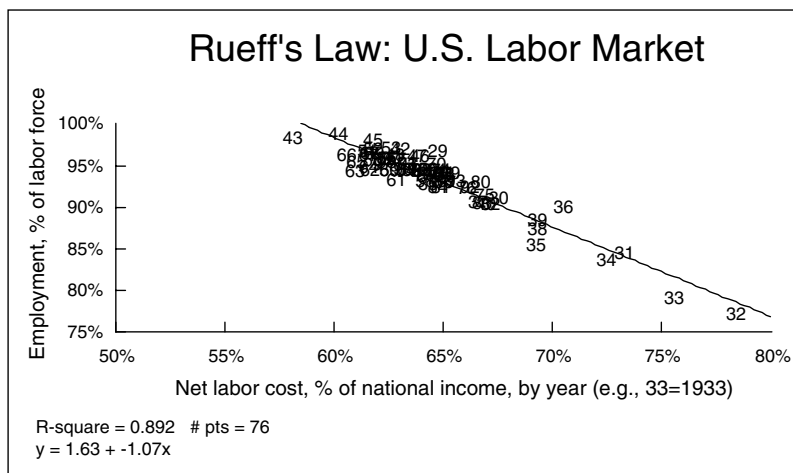


The higher the net labor cost, the higher the unemployment rate. Labor's share of actual national income reached seventy-eight percent at the depth of the Great Depression; at the same time, unemployment peaked at nearly twenty-three per-

cent.⁵⁷ The lower the net labor cost, the lower the unemployment rate. But, again as theory predicts, there is a limit, set by full employment, below which labor's net share of national income has never fallen. The lowest net labor share of national income since 1929 was about fifty-nine percent, and coincided with the lowest unemployment rate on record: one percent at the peak of the World War II boom in 1943. Since then, labor's share of national income has always been higher and has been mirrored by changes in unemployment.

Yet while labor's net share of national income, including transfer payments, has risen since World War II, the share received by employed wage-earners has *declined*. The entire difference is due to transfer payments to persons who are not employed in the labor market.

If we plot unemployment against the total net labor cost for all years, we have the updated version of Rueff's Law—in effect, the demand curve for labor in the United States.



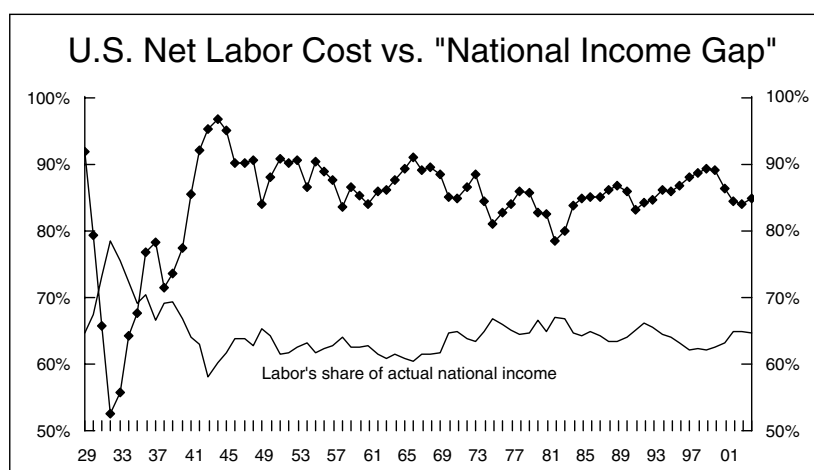
On average over the whole period, each 1 percentage point change in net labor cost, as a share of national income, has been associated with a 1.1 percentage point change in the rate of employment in the opposite direction, and in the unemployment rate in the same direction. (Labor share up 1 percentage point: employment rate down and unemployment rate up 1.1 percentage point; labor share down 1 percentage point: employ-

57. As currently calculated. Before World War II, workers employed on public works projects were counted as unemployed, which raised the peak rate reported at the time to about twenty-five percent.

ment rate up and unemployment rate down 1.1 percentage point.)

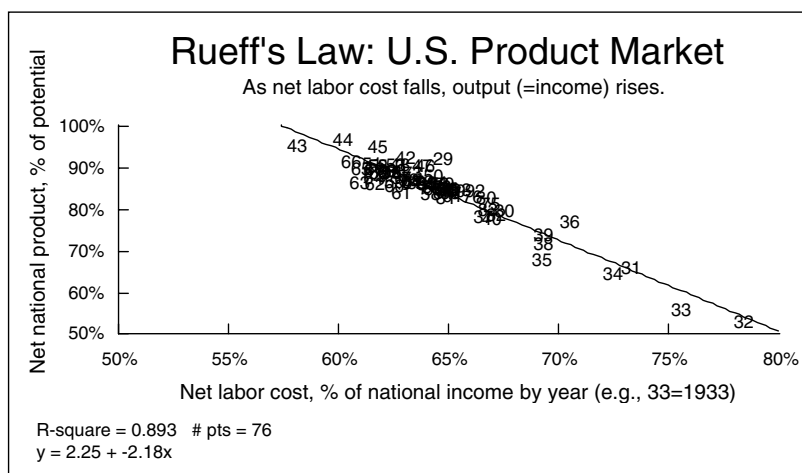
5. Net Labor Costs and National Output/Income

Since both workers and productive property are necessary for any increase in production, in approximately constant proportions, every increase in unemployment is associated with a proportional decline in output relative to the level that could be achieved if all workers were fully employed.⁵⁸ This difference is often described as the “GDP gap,” but for our purposes it makes more sense to express it in terms of the “national income gap.”



If we plot the relationship between the net cost of labor and the “national income gap” for all years, we find that the two series trace a relationship quite similar to that between the net cost of labor and the unemployment rate. This is not surprising, since the gap is estimated in relation to some measure of full employment. The only difference is that the change in real national income is twice as large as the change in employment. The main reason is that national income includes both labor and property compensation, and property compensation varies by a multiple of the corresponding change in labor compensation.

58. $NI/NI_{pot} = c(L/L_{pot})$; empirically, $c \approx 2$. When expressed in terms of GDP, this relationship is sometimes called “Okun’s Law.” The output gap is derived from that of the Congressional Budget Office, which is based on CBO’s estimate of the Non-Accelerating Inflation Rate of Unemployment, which has frequently changed. The measure used here is based on output if all workers were employed: zero unemployment.



Over the period since 1929, every one percentage-point rise in the U.S. net labor cost has been associated with about a 2.2 percentage-point decline of national income below its potential at full employment.

6. The Net Effect on Real Labor Income

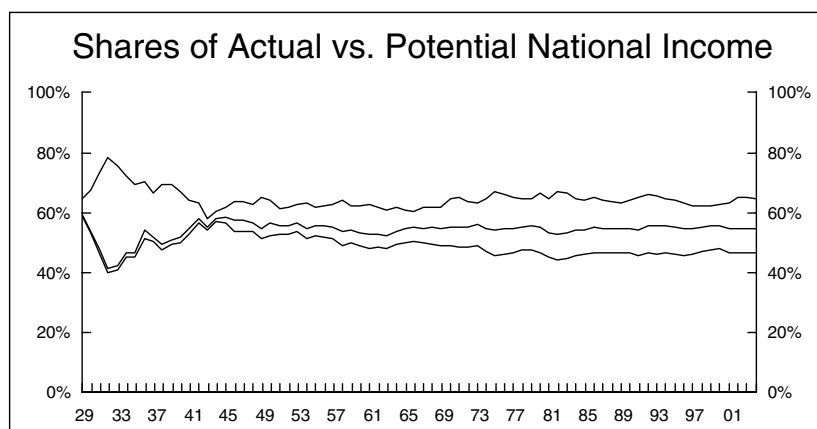
We have found that economic policies (or any other circumstances) that alter the net shares of total national income between workers and property owners have two effects, which work in opposite directions. On the one hand, reducing the relative income share received by property owners necessarily increases the relative remaining share, which goes to employed workers and recipients of transfer payments. (I will call this combined share “net labor cost” for simplicity.) On the other hand, reducing the relative share of net income received by property owners raises the unemployment rate and lowers total actual national income, including the labor compensation of employed workers, in absolute terms.

Thus not only the cost of labor and employment, but also total output and income, are all tied in a unique relationship. Labor’s net share of income is inversely related to employment; but employment is positively related to output and income (including labor income). Total labor income including take-home pay and transfer payments is *positively* related to national income, and *inversely* related to labor’s share of national income.

Why is this? For any given equipment, organization, and technology, each extra hour of labor has less equipment to work with, and so adds less to output than the previous hour. Therefore total employment, output, and national income increase in

absolute terms; but the “efficiency wage”—the share of labor compensation in total national income—must fall. However, labor’s share of income must stop falling when full employment is reached since, if no more labor is forthcoming, labor’s relative contribution to extra output can not decline any further. Similarly, labor’s income share rises with unemployment, because the last unit of labor hired has more capital to work with; but real labor income falls, because employment and national income are cut back.

It is crucial, therefore, to know the net result of both effects; for this will determine whether workers, the owners of “human capital,” are better or worse off if they seek a larger share of lower national income or a smaller share of a larger national income. And we can answer this by comparing the shares of actual national income with potential national income, which is the total national income that would be realized if all workers were employed.



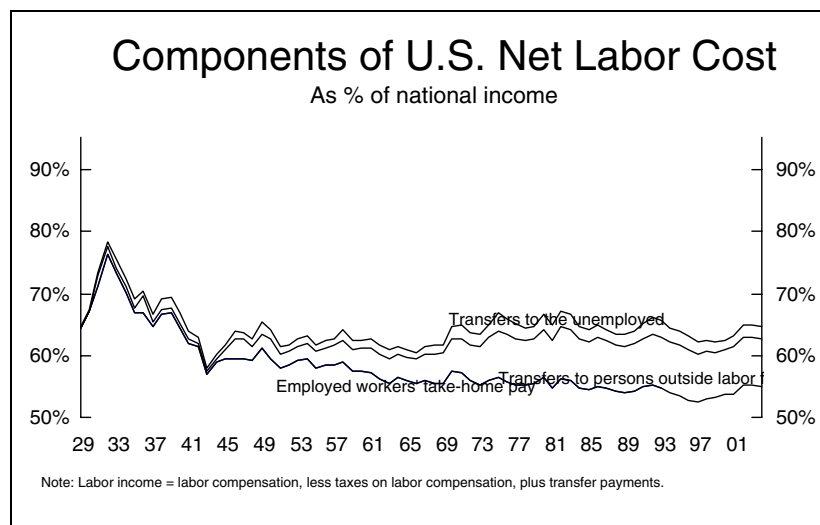
The comparison cannot be taken as precise, but does indicate the general order of magnitudes involved. The most significant fact is that while net labor income (take-home pay plus net transfer payments) has never fallen *below* sixty-two percent of *actual* national income, it also has never *exceeded* sixty-six percent of *potential* national income (though it has fallen as low as fifty percent, coinciding with the Depression peak in net labor costs as a share of actual national income). What this means is that, under the best of circumstances, the gains in net labor income due to a larger *share* of national income have never significantly exceeded the absolute losses caused by a fall in national income; but the losses of net labor income associated with higher unem-

ployment have often significantly exceeded the gains from an increased share.

This answers the question whether workers as a group can increase their real income by ceasing to be employed in the labor market and collecting transfer payments while unemployed or remaining outside the labor force instead. Rather, it strongly implies that most transfer payments are inherently funded by reducing the take-home pay of employed workers. It also points to the central importance of measures that will increase earning ability—potential labor income—particularly through increased education.

7. Different Transfer Payments, Different Effects on Shares of Income

The same analysis permits us to break the net cost of labor down into its components, and thereby see the different economic results of different tax-and-transfer programs. All transfer payments to persons represent, in effect, a purchase of labor services by the government, subject to certain conditions. Generally speaking, these conditions are the most decisive feature of any such program, because they largely determine who ultimately pays for the transfer payments. From this point of view, we noted, there are three basic kinds of transfer payments to persons: 1. *Transfer payments to the unemployed*, 2. *Transfer payments to persons outside the labor force*, and 3. *Transfer payments conditioned on being employed in the labor market*. Moreover, our theory suggested that unemployment will be increased by the first, but not the second and third, kinds of transfer payments. Therefore, when we look at transfer payments, we should find that transfer payments to the unemployed raise labor's share of national income, while transfer payments to persons outside the labor force are matched by a reduction in take-home pay as a share of national income. (Both should reduce labor market employment and lower market production and real national income.) And this is in fact what the data tell us.

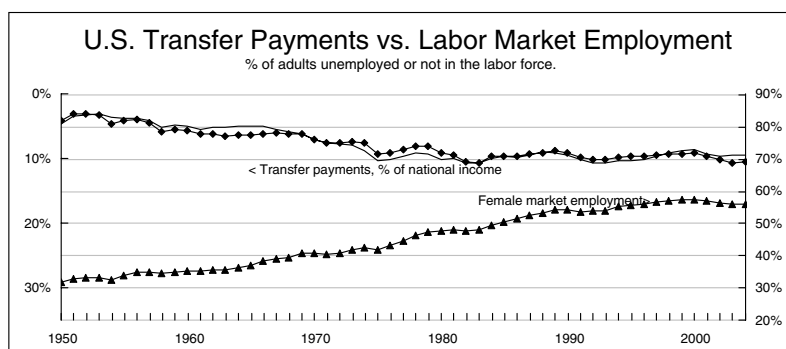


The graph shows that, apart from cyclical variations, the rise in labor's share of income since the Second World War is approximately equal to the rise of benefits to the unemployed (mostly unemployment insurance and welfare to the able-bodied), while the fall in take-home pay is equal to the rise of benefits to persons outside the labor force (mostly transfers to the aged and disabled).

While the effect of fiscal policy on unemployment is unambiguous, its effect on overall labor market participation is not. This is because government transfer payments to persons are in some measure substitutes for transfer payments between men and women within the household. Marriage involves a specialization of roles, in which one partner (usually, but not necessarily the woman) produces more goods and services that are directly consumed within the household, while the other (usually, but not necessarily the man) earns more labor market compensation by participating more in market production. Generally, the choice is made depending on each partner's labor market earnings ability and whether the couple is raising children. Since men's average lifetime labor market earnings are on average about twice as high as women's,⁵⁹ it is usually the husband who works more in the labor market than the wife. The current series on labor market employment begins only in 1947, but the covariation in transfer payments as a share of national income and men's and women's labor market employment suggests that with-

59. See, e.g., MUELLER, THE ANSWER TO THREE PUZZLES, *supra* note 53.

out any transfer payments, the labor market employment of men would be about eighty-nine percent and the labor market employment of women would be about twenty-five percent.⁶⁰ As the share of government transfer payments in national income has risen, the labor force participation of men has fallen, while the labor force participation of women has risen. The employment/population ratio for men has fallen about two percentage points for each one percentage point increase in transfer payments as a share of national income.⁶¹ But for women, the relationship is more complicated. As with men, the employment/population ratio has fallen about two percentage points with each one percentage point increase in transfer payments conditioned on being unemployed (mostly unemployment insurance and welfare to the able-bodied).⁶² But women's employment/population ratio has risen about four percentage points for each one percentage point increase in transfer payments to persons outside the labor force.⁶³ This is partly because the rise of transfer payments has lowered take-home pay for all workers as a share of national income.⁶⁴ Unless they are disabled, most married women under age sixty-five do not qualify for such transfer payments, but many have entered the labor force to help make up for the relative decline of earnings by husbands—a decline, however, which is reinforced by the increased supply of highly educated women in an economy based increasingly on knowledge rather than physical strength.⁶⁵



60. *Id.*

61. *Id.*

62. *Id.*

63. *Id.*

64. *Id.*

65. *Id.*

Thus we have our answers to the two questions that we set out to answer about the effects of fiscal policy on employment. First, the variation in the unemployment rate is almost entirely explained by the variation in the net cost of labor as a share of national income. Fiscal policy increases unemployment when transfer payments to persons increase the net labor share of national income, and this can occur in two ways: first, when transfer payments are conditioned on not being employed in the labor market (as with unemployment insurance and welfare for the able-bodied), and second, when transfer payments to persons are funded by taxes on property income rather than labor income. Second, the overall labor force participation and the employment/population ratio have risen because the labor force participation of women has risen over the past half-century by more than the labor force participation of men has fallen. The labor force participation of women has risen and the labor force participation of men has fallen for the same reason: the rise in government transfer payments to persons, which substitute for the transfers that occur within the household between married men and married women.

IV. FISCAL POLICY AND FERTILITY

When beginning our discussion of the relations of fiscal policy to employment, we were able to assume that the population and labor force were given. However, we warned that the assumption would not be tenable when discussing fiscal policy and fertility, since fertility concerns precisely whether and in what measure each generation of adults replaces itself by having children. A surprisingly large and politically influential number of economists make exactly that erroneous assumption when discussing fiscal policies such as taxation and Social Security.⁶⁶ But it will be more enlightening to focus instead on the most sophisticated economic theories of fertility, most of which are either derived from or reactions to the work of Gary S. Becker, who does not make that error.

When Becker's elder University of Chicago colleague Theodore W. Schultz rediscovered Aristotle's theory of the household

66. See, e.g., Martin Feldstein, *Social Security, Induced Retirement, and Aggregate Capital Accumulation*, 82 J. OF POL. ECON. 5, 905 (1974); Martin Feldstein, *Does the United States Save Too Little?* AMER. ECON. REV., Feb. 1977, at 116; Martin Feldstein, *Fiscal Policies, Capital Formation and Capitalism* (Nat'l Bureau of Econ. Research, Working Paper No. 4885, 1994); Martin Feldstein & Andrew Samwick, *The Economics of Prefunding Social Security and Medicare Benefits* (Nat'l Bureau of Econ. Research, Working Paper No. 6055, 1997).

as a producing unit,⁶⁷ Becker aspired to become its foremost theorist. The strength of Becker's approach is precisely its treatment of household production of "human capital," which proved far more fruitful than earlier theories that treated the size and useful skills of the population as given.⁶⁸ The main drawback is one shared with all varieties of neoclassical economic theory: the absence of the element of theory that describes our preferences for people.⁶⁹

Perhaps Becker's earliest succinct description of what he and George J. Stigler came to call the "economic approach to human behavior" is this:

In the standard theory all consumers behave similarly in the sense that they all maximize the same thing—utility or satisfaction. It is only a further extension then to argue that they all derive that utility from the same "basic pleasures" or preference function, and differ only in their ability to produce these "pleasures."⁷⁰

In the same place, Becker argued that "The utility function should pertain exclusively to preferences; it should deal with the final objects of choice by the consumer unit."⁷¹ This fails to recognize that all persons have two kinds of preferences: preferences for persons, which are expressed in the distribution of their resources, and preferences for economic goods, which are expressed in the content of those resources.

Becker justified his assumption of universally identical, unchanging preferences by the *absence* of a theory of preferences in economic theory: "Since economists generally have had little to contribute, especially in recent times, to the understanding of how preferences are formed, preferences are assumed not to change substantially over time, nor to be very different between wealthy and poor persons, or even between persons in different societies and cultures."⁷²

In other words, Becker begins by identifying "standard theory" with the version of neoclassical theory, which interprets utility in the peculiar utilitarian sense, as a "*thing*"—a synonym for pleasure—rather than an order of preference, which is a *relation*

67. Theodore W. Schultz, *Investment in Human Capital*, AM. ECON. REV., Mar. 1961, at 1.

68. *Id.*

69. *Id.*

70. GARY S. BECKER, *THE ECONOMIC APPROACH TO HUMAN BEHAVIOR* 145 (1976).

71. *Id.* at 146.

72. *Id.* at 5.

between a person and a thing.⁷³ This is sometimes described as “cardinal” as opposed to “ordinal” utility. Becker then proceeds to argue that these basic pleasures are the same for all persons and for each person over time, which might be called the “Bentham-Becker-Stigler assumptions:” the “final objects of choice” are identified with the “basic commodities” listed in the utility function; these “basic commodities” are said to include persons (for example, “children”); they are identified with Jeremy Bentham’s list of pleasures; and “tastes” for these “final objects” are assumed to be identical constants for everyone.⁷⁴ But the Bentham-Becker-Stigler assumptions mean that humans are not free to choose or alter their fundamental preferences, either for commodities or for persons.

According to the “economic approach to human behavior,” rather than four elements, economic theory contains only three: utility, production, and a “budget constraint.”⁷⁵

A. *Utility*

Becker theorizes that the “final objects of choice” are certain “basic commodities,” which he identifies with the satisfaction of Jeremy Bentham’s list of fifteen (or twenty-two) basic, supposedly instinctive pleasures.⁷⁶ Each basic commodity is to be understood as a *constant* because, as Becker and Stigler put it, it is “the same to all men” and “stable over time.”⁷⁷

The utility of “basic commodities” is not always uniquely assigned to a single person. Becker defines an altruist as someone who gains utility from the utility of others.⁷⁸ So when two people are mutually altruistic, the result is a “hall of mirrors”: A’s utility increases B’s utility, which in turn increases A’s utility, which increases B’s utility, and so on.⁷⁹ Becker concedes that these overlapping and interacting utility functions entail an “infi-

73. See, e.g., *id.*

74. See, e.g., *id.*

75. See, e.g., *id.* at 134–35 (replacing both the equilibrium conditions and final distribution function).

76. See R.T. Michael & Gary S. Becker, *On the New Theory of Consumer Behavior*, 75 THE SWEDISH J. OF ECON. 378 (1973), reprinted in BECKER, *supra* note 70, at 131 (rewriting the utility function as (2.1a) $U = U(Z_1, \dots, Z_n)$ and adding the restriction (2.1b) $Z_j = b_j$, a constant).

77. GARY S. BECKER, ACCOUNTING FOR TASTES 24–29 (1996) (citing George J. Stigler & Gary S. Becker, *De Gustibus Non Est Disputandum*, AMER. ECON. REV., Mar. 1977, at 76).

78. *Id.*

79. *Id.*

nite regress”⁸⁰ but argues that with sufficiently restrictive assumptions about the degree of altruism, the interactions need not involve actually infinite utility. However, as we will see, these restrictive assumptions are often contradicted by the empirical facts about behavior.

B. *Production*

According to Becker, households “combine time and market goods to produce [the] more basic commodities that directly enter their utility functions.”⁸¹

C. *Equilibrium*

Corresponding to the statement of equilibrium conditions in the scholastic system, Becker gives what he calls each household’s “resource constraint.”⁸² This includes not only market labor and property compensation received from market activities but also any products produced and consumed outside the market in the household economy.

D. *The Missing Equation*

Becker’s three equations are broadly similar in form and identical in function to the last first three of the four in the “neoscholastic” system we have used. Comparing the two systems, however, reveals that the neoclassical system as exemplified by Becker’s theory seems to be missing an equation: the one that specifies the *final distribution* of economic goods among per-

80. Gary S. Becker, *A Theory of Social Interactions*, 82 J. OF POL. ECON. 1063, 1063–91 (1974), reprinted in BECKER, *supra* note 70, at 253.

81. Gary S. Becker, *A Theory of the Allocation of Time*, ECON. J., Sept. 1965, at 493, reprinted in BECKER, *supra* note 70, at 89. This appears to be Becker’s earliest description of the production function, in which he writes the production function as follows:

$$(2.3c) Z_j = f(x_1, \dots, x_n; t_1, \dots, t_n).$$

Equation (2.3c) is similar in form to our (2.3b) above, except that the product is a “basic commodity,” Z_j , rather than “human capital.” Each x is understood as a product purchased by households from business firms (equivalent to ΔK , above), and t_1, \dots, t_n is described as the non-market “time” of the members of the household—by which Becker presumably means the human capital services of the household members during intervals of time.

82. See, e.g., *id.* (2.4a) $S = wT + V = \Sigma(wt_i + p_ix_i)$. Equation (2.3a) says that “total income,” S , is equal to the average wage rate w times total units of (market and nonmarket) “time,” T , plus non-wage income, V ; and that this total income is equal to the sum of the value of household’s non-market “time,” plus market goods purchased, p_ix_i . As we will see shortly, Equation (2.4a) cannot be considered a “resource constraint” without additional assumptions as to how the income is distributed.

sons.⁸³ This can be interpreted in two ways. The first interpretation is that Becker's system is logically incomplete, having one more variable than the number of equations can explain. This would mean that the system does not have a unique equilibrium. The second interpretation is that Becker's system is logically complete, but some of the equations have not been spelled out. Specifically, it could be interpreted as including all four elements of the scholastic system, plus the additional assumption that everyone is always selfish.⁸⁴ Since this very "strong" assumption is not required by the logic of economic theory, its truth or falsity can only be established by investigation of the facts. Under either interpretation, the system has a problem.⁸⁵

The consequences of the absence of the "distribution function" for the economic theory of fertility are strikingly reflected in two recent papers.⁸⁶ Both attempt to describe and test the leading variants of the state-of-the-art economic theory of fertility.

Xu's paper surveys the theories of the family upon which current theories of fertility rest and the evidence for these assumptions. It finds two problems, one in theory and one in evidence. The problem with the theory is its logical (in)consistency:

In neo-classical family economics, the household is the unit of study. . . . However, it is the welfare of individuals that should be the fundamental concern. Earlier unitary household models had to reconcile the single utility framework with the presence of multiple individuals. To do so unitary household models assume that family members' utility functions can be systematically aggregated, that indi-

83. See, e.g., *id.* Equations (1.1) and (2.1) above.

84. See, e.g., *id.* This would add the special assumption,

(2.7) $D_{ii}/\Sigma D_{ij} = 1$, thus converting the general form of the final distribution function

(2.1) $C_{Ki} + C_{Li} = Y_i D_{ii}/\Sigma D_{ij}$

into a special case,

(2.8) $C_{Ki} + C_{Li} = Y_i$,

meaning that all income received by anyone is consumed by that person.

85. See, e.g., *id.* Becker's interacting utility functions for altruists do not cure this. They imply that all altruists are selfish in the sense that they undertake such behavior only because they gain pleasure from it. But their main practical problem is that they assume different people can consume the same scarce good, which is a contradiction in terms.

86. See generally Michele Boldrin et al., *Fertility and Social Security* (Nat'l Bureau of Econ. Research, Working Paper No. 11146, 2005); Zeyu Xu, A Survey on Intra-Household Models and Evidence (May 2004), [http://www.columbia.edu/~zx20/Papers/A%20Survey%20on%20Intra-Household%20Models%20\(submitted\).pdf](http://www.columbia.edu/~zx20/Papers/A%20Survey%20on%20Intra-Household%20Models%20(submitted).pdf).

vidual budget constraints can be combined, and that household production can be unified. To make such aggregations household members are either assumed to have homogeneous preferences, or have an altruistic household head that has all the power within the household.⁸⁷

The paper then surveys alternate theories that see the family as a place of conflict and bargaining rather than altruism.⁸⁸ But a parallel survey of the empirical evidence for all these variants leads to the following conclusion: “Empirical support for the existence of altruistic motives is not overwhelming. Indeed, some of the most influential studies have reached mixed conclusions, possibly favoring ‘exchange’ rather than altruism as a motive for intra-family transfers.”⁸⁹

The paper by Boldrin, Mariachristina De Nardi, and Larry E. Jones argues that the Boldrin-Jones variant favored by its authors fits the empirical facts about fertility and saving better than the alternate Becker-Barro model.⁹⁰ But the authors also point out that all attempts to test either theory depend heavily on assumptions made for at least nine intermediate variables; that the results vary widely with alternate assumptions; and that the variation in results affects precisely the most important policy elements: the effects of pay-as-you-go retirement pensions and national saving on the Total Fertility Rate: “What varies substantially, and sometimes dramatically, with the preference parameters are the levels of both fertility and the capital-output ratio, and this sensitivity in levels is common to both models.”⁹¹

Moreover, the models’ accuracies do not inspire confidence in their use for major policy decisions. For example, the version preferred by the authors predicted a Total Fertility Rate (TFR) for the United States of 2.2 in 1950 when the actual TFR was 3.0, while the best fit for the U.S. TFR in 2000 was 1.82 when the actual TFR was 2.05—a difference between a significantly declining and an approximately stable population.⁹² In order to “calibrate” the model to predict the values actually observed, the authors found it necessary to use assumptions that they found questionable because they are contrary to previous research.

87. See Xu, *supra* note 86, at 2 (citation omitted).

88. See *id.*

89. *Id.* at 3.

90. See Boldrin et al., *supra* note 86.

91. *Id.* at 32.

92. *Id.*

“This seems to point to a lack of richness of the models overall.”⁹³

The Becker-Barro variant assumes, in effect, that every household is a “dynasty” governed by a single founder who is altruistic, far-sighted and all-powerful, but that none of his or her descendants exhibit any of these qualities.⁹⁴ The Boldrin-Jones variant assumes, in effect, that all parents are essentially selfish toward their children while all children are essentially altruistic toward their parents.⁹⁵ The numerous models of intra-household bargaining assume, in effect, that everyone is purely selfish or even somewhat predatory.⁹⁶ And the empirical data appear to support none of these *a priori* assumptions.⁹⁷

Such studies have also tended to confine their focus to countries representing a relatively small share of the world’s population and a relatively small share of cultures (Europe and its cultural offshoots), despite the claim that the “economic approach to human behavior” is applicable in all cultures.⁹⁸ In short, the economic theory of fertility is in some disarray.

Despite their mathematical sophistication, all are handicapped by the oversimplification in its basic theory, resulting in one fewer explanatory variable than variable to be described. This paradoxically results in economists using highly complicated explanations with many intermediate variables, when a basic theory that begins by including the missing element can explain much more, far more simply.

Despite their sharp disagreements, all these competing theories share one common characteristic: they offer the people they study no choice about the most fundamental feature of every economic decision. Fortunately, the problems just recounted are not peculiar to the specific models but rather are the result of attempting to explain anything so fundamental as fertility (the reproduction of human persons) without using the most fundamental element of economic theory, which describes one’s preferences for persons.⁹⁹ Equally fortunate, if we include this element from the beginning, the result is not only a major simplification of the theory of fertility, but also a major improvement in

93. *Id.*

94. *Id.*

95. *Id.*

96. *Id.*

97. *Id.*

98. *Id.*

99. See equations, *supra* note 10. Aristotle’s and Augustine’s “final distribution function,” which describes personal love and hate and domestic and political distributive justice, is described in equations (1.1) and (2.1) above.

the clarity, applicability, and accuracy of its implications for fiscal policy.

The simplest and most widely used measure of fertility is the Total Fertility Rate, which calculates how many children the average woman would bear in her lifetime if her experience at each age were the same as the average of women of all ages in that year.¹⁰⁰ Since it takes exactly one man and one woman to produce each child, the TFR is also a fairly accurate measure of the number of births to each adult couple (though of course multiple births, births by different partners, etc., are possible and are included in the statistic).¹⁰¹

Boldrin, De Nardi and Jones follow other researchers in relying heavily on the Infant Mortality Rate as an explanatory variable for the TFR, mostly because the two have a high statistical correlation.¹⁰² But this is because the two variables are not independent. The number of infants who die shortly after birth is obviously included in the number of infants recently born, which tends to make the Infant Mortality Rate variable dominate the results even when mortality is relatively low.¹⁰³ One way to adjust for this problem is to use the Net Reproduction Rate (NRR), which takes mortality into account, instead of the TFR, which does not. The NRR is not widely available for most countries but can be approximated by subtracting the Infant Mortality Rate from the TFR, resulting in what might be called the net Total Fertility Rate or net TFR.¹⁰⁴ The same study also used per capita GDP, which has a similar problem to the Infant Mortality Rate, because per capita GDP is highly correlated with longevity: people who expect to live long invest more in human and nonhuman capital because the returns can be expected for a longer period; conversely, people with higher incomes tend to afford better health care and so live longer.¹⁰⁵ This problem, too, can be handled, by dividing any measure of per capita income by a measure of longevity. In this way, essentially extraneous factors can be accommodated without clouding the main issues.

There is little disagreement in principle as to why people have children. The decision boils down to two motives. People have children because they love them, or because they love themselves. To the extent that people have children for the first reason, the decision will not be affected by the availability of other

100. See, e.g., Boldrin et al., *supra* note 86.

101. *Id.*

102. *Id.*

103. *Id.*

104. *Id.*

105. *Id.*

forms of saving or social insurance, but to the extent that people have children for the second reason, both private saving and government social insurance will reduce fertility.¹⁰⁶ In the latter case, having children acts as an economic substitute for private saving or government social insurance, and vice versa. It is conceivable to have a child solely for the benefits received, as if having a child was essentially the same as investing in a stock or bond. (As we found when describing the basic theory above, raising children who may support one in old age, investing in property, and government transfer payments funded by dedicated taxes can all be expressed in the same way, as a rate of return on the initial outlay.)

Those were essentially the issues posed by the Becker-Barro and Boldrin-Jones models just described, but they came to substantially different conclusions. Both models agreed that the provision of social insurance reduces fertility, but they reached sharply different conclusions about the result of forcing people to save more for their own retirement in the form of claims on property, or “nonhuman capital.” According to the Boldrin-Jones model, increased private saving will also substantially reduce fertility, while according to Barro-Becker it will not.¹⁰⁷

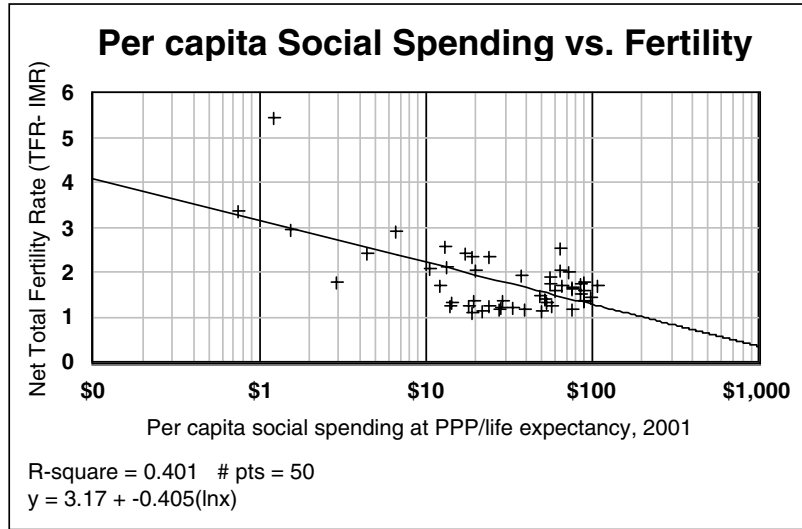
One reason for the inability to reach a clear conclusion is that both studies used the *rate* of saving and the payroll tax *rate* as shares of total income, when a per capita measure would have been more appropriate.¹⁰⁸ We can see this by comparing the net TFR with per capita government social spending and per capita national saving for the fifty countries (listed in the appendix), comprising about two-thirds of the world’s population, for which all variables were available for 2001. Both per capita social spending and per capita national saving were measured at Purchasing Power Parity (PPP), a technique that adjusts for the purchasing powers of the currencies in which the original data are expressed.¹⁰⁹

106. *Id.*

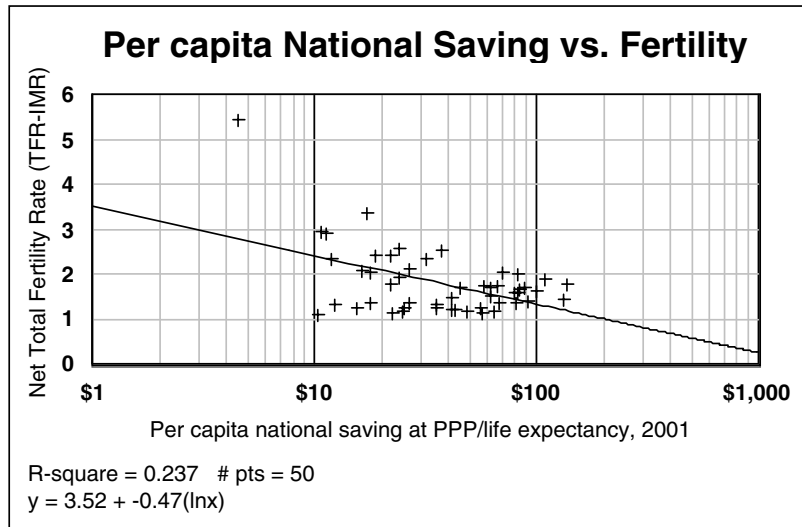
107. *Id.*

108. *Id.*

109. *See id.* Gross national income per capita at Purchasing Power Parity (PPP) and national saving per capita are from World Bank 2003. Social spending per capita at PPP, calculated from the same sources, comes mostly from OECD 2004.



As the charts immediately above and below indicate, per capita social spending and per capita national saving are both inversely proportional to the net TFR, and by about the same proportions.¹¹⁰ (The outlier in each chart is Nigeria, perhaps due to poor data).



110. *See id.* The adjustments for infant mortality and life expectancy are valuable but do not significantly affect the statistical relationships.

The countries with lower fertility rates lying below the lines representing those relationships (TFRs close to 1 regardless of social spending and national saving) consist almost entirely of countries currently or recently under totalitarian governments.¹¹¹ Including a dummy variable for totalitarian government is highly statistically significant in all versions of the model, regardless of the other variables. But it alone is not sufficient to raise the accuracy of a model beyond the results achieved by Boldrin, De Nardi, and Jones.

We have suggested that the failure to account for people's fundamental preferences for persons is responsible for the ambiguity of the findings of the Xu, Boldrin, De Nardi, and Jones results. In the "neo-scholastic" framework we have outlined, whether we are selfish or unselfish, we allocate our scarce resources between ourselves and others in proportion to the relative significance of the persons including ourselves: at the personal level, in proportion to our personal love for those persons, in any social community, in accord with that community's "distributive justice," or formula for allocating the use of its common goods.¹¹²

As Augustine's economic analysis pointed out, the two great commandments—you shall love God above all else and your neighbor as yourself¹¹³—are not only normatively or prescriptively valid but also positively or descriptively valid, even for those who disobey them. This is because even those who steal from, rather than sharing with, others resist having their own goods stolen and enjoy receiving gifts. Moreover, the two commandments are intimately related, because the decision to devote scarce resources (such as time or money) to another person is essentially the same, whether the other person is God or another human being. In both cases, the decision means sacrificing goods that could otherwise be used for oneself, and thus requires the same elevation of the other person in one's preferences relative to oneself.

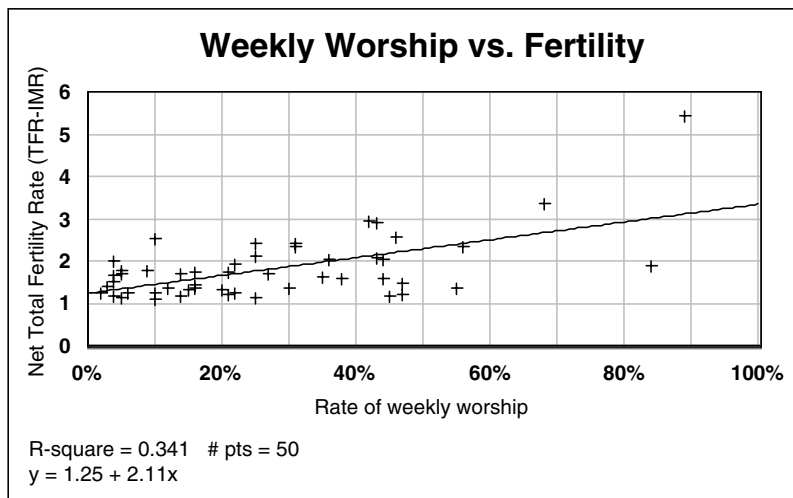
Thus, the choice to have children because we love them rather than because of the benefits they confer upon us should be positively related to the frequency of worship in all cultures. If Becker is correct that everyone's preferences are identical and that these preferences are identical in all cultures, we should find

111. *Id.*

112. *Id.*

113. *Deuteronomy* 6:5; *Leviticus* 19:18 (noted in *Matthew* 22:37–39). As Augustine carefully explained, "as yourself" cannot always mean "equally with yourself" when scarce goods are involved. But it does always mean "as a person" like yourself. See SAINT AUGUSTINE, ON CHRISTIAN DOCTRINE, *supra* note 5.

that the frequency of worship makes no difference. However, we find that the rates of weekly worship and fertility are positively related across countries.¹¹⁴ On average, in countries where weekly worship is close to zero, the TFR is approximately 1.25. The relationship in all countries suggests that one hundred percent weekly attendance is associated with a net TFR about 2.1 children higher (3.4).¹¹⁵



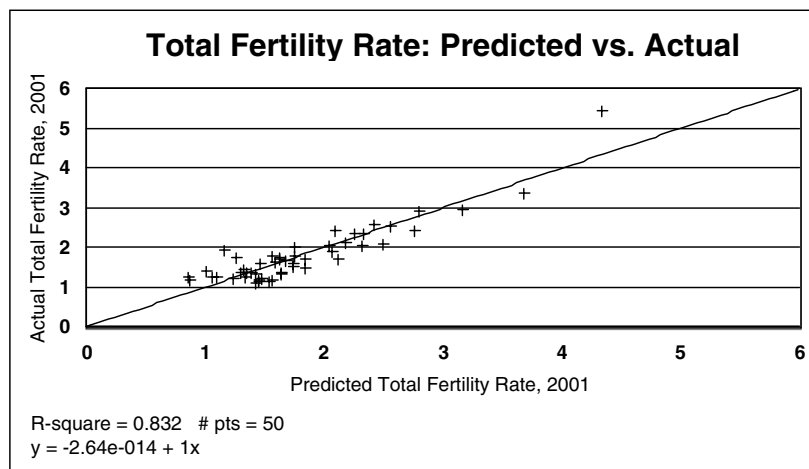
Thus the theory of fertility makes a good test case of the two ways of treating peoples' most fundamental preferences, as well as of the impact of social spending and national saving on fertility.¹¹⁶ A model including these three factors, with totalitarian government, explains more than eighty percent of the variation in the net TFR for the countries surveyed, comprising two-thirds of the world's population. And the same model explains the American net TFR exactly: 2.05 predicted and actual in 2001. Including a detailed breakdown of each country's population by religious affiliation showed that the Jewish and Protestant populations are statistically significant (perhaps because weekly communal worship is the norm for religious participation among

114. See World Values Survey, The Values Surveys, 2001, <http://www.jdsurvey.com:8080/bdasepjds/wvsevs/PrinDocumentation.jsp> (last visited Apr. 28, 2006).

115. *Id.*

116. See, e.g., *id.* The equation was Net TFR (Total Fertility Rate – Infant Mortality Rate, 2001) = $c_1 + c_2 * (\text{rate of weekly worship}) + c_3 * (\% \text{ Protestant population}) + c_4 * (\% \text{ Jewish population}) + c_5 * (\text{totalitarian legacy}) + c_6 * \log(\text{social spending per capita at PPP / life expectancy, 2001}) + c_7 * \log(\text{national saving per capita at PPP / life expectancy, 2001})$. The results were as follows:

Catholics, Orthodox, and Muslims but not for Protestants and Jews around the world), but that the addition of Catholic, Orthodox, Muslim, and Hindu populations is not statistically significant and may be omitted. The results by country are listed in the appendix.



V. SUMMARY AND CONCLUSION: HOW WILL PROJECTED FISCAL POLICY AFFECT EMPLOYMENT AND FERTILITY IN COMING DECADES?

Our investigation has shown the basic principles by which fiscal policy affects employment and fertility. First, by applying Rueff's Law, we found that unemployment is a function of the net cost of labor, which is the same as workers' take-home pay plus government benefits to persons as a share of total national income—the remainder paid as net compensation to owners of productive property. We also found that, because government transfer payments are a substitute for the transfers that otherwise would take place within the household, particularly between married men and married women, increasing government transfer

	Coefficient	Standard error	t-statistic
c ₁	3.3988	0.3286	10.3443
c ₂	1.3537	0.2677	5.0555
c ₃	1.5908	0.4364	3.6455
c ₄	0.8857	0.1851	4.7840
c ₅	-0.5851	0.1152	-5.0808
c ₆	-0.2914	0.0069	-4.2125
c ₇	-0.2820	0.1067	-2.6422

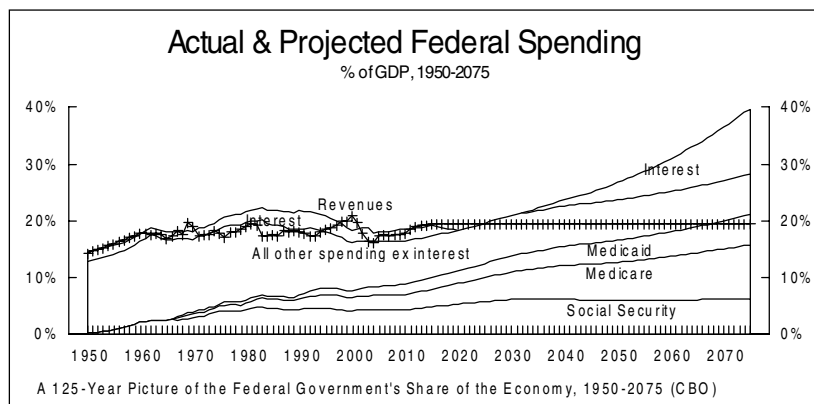
Adjusted R² = 0.80847 n = 50.

payments as a share of national income has lowered the labor market employment of men but on balance increased the labor market employment of women. The share of adults employed in the labor market has increased in the past fifty years because the share of women employed in the labor market has increased by more than the share of men has declined. We found that since social benefits accrue to owners of “human capital,” social benefits funded by taxes on property income raise the net cost of labor and the unemployment rate, while benefits funded with payroll taxes lower labor market employment and take-home pay, but without raising the net cost of labor or the unemployment rate.

Second, we have extended the analysis to investigate the impact of fiscal policy upon fertility. This required us to fill a crucial gap in the economic theory of fertility, caused by neglect of Augustine’s insight that every person’s most fundamental scale of preferences is not for economic goods (that is, utility) but for the persons who are the ends or purposes of the activity (love at the personal level and distributive justice at all social and political levels). Since we distribute our personal or political resources to other persons in proportion to the significance of those persons to ourselves, and since the same scarce resources cannot be consumed by oneself and others, the share of resources devoted to oneself is inversely related to the share devoted to others. This helped us discover that most variation in the TFR among the fifty countries for which data are available (comprising about two-thirds of world population) is explained by just three basic factors: the TFR is inversely related to per capita social benefits and per capita national saving, but positively related to frequency of worship (a signal indicator of resources allocated to other persons).

This helps us understand the past and the present. But what does it tell us about the future impact of fiscal policy upon the American worker? We can suggest the general answer by applying the same analysis to the course of Federal fiscal policy projected over the next seventy-five years under current law. As is well known, total Federal spending as a share of the economy is expected to increase by about one-half, entirely the result of three basic programs: Social Security retirement and disability benefits, Medicare health benefits for persons over age sixty-five, and Medicaid for the indigent. At the same time, total Federal revenues are expected to remain close to their average since about 1960, of about twenty percent of gross domestic product (GDP). As a result, interest payments are expected to add more

than ten percentage points, with total Federal spending reaching about forty percent of GDP by 2075.



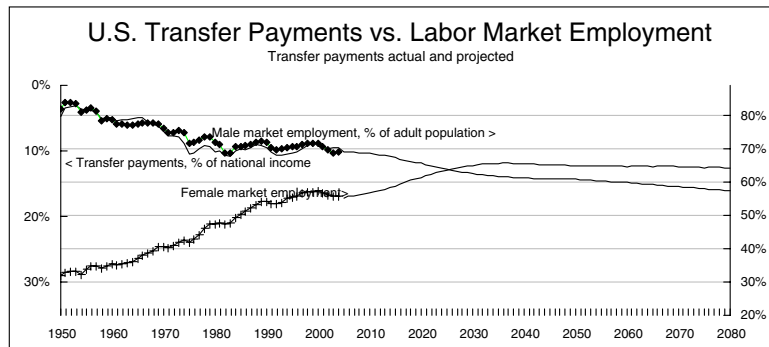
What effects are these developments likely to have for the fertility and employment of the American worker? There are three basic implications.

First, by applying our model of fertility, we can anticipate that under those circumstances, the American TFR would be likely to decline from 2.05, which is close to the replacement rate of 2.11, to about 1.87 by 2025, 1.73 by 2050, and 1.60 by 2075 (see column (2) in the table below). That would fall between the Social Security Administration's Trustees' Intermediate and High-Cost Assumptions from 2025 through 2050, and be worse than the High Cost Assumptions thereafter. Without immigration, the U.S. population would shrink, but the decline in fertility could be expected to increase the inflow of immigrants (though also the resistance by anti-immigrant political factions). Despite this, if legal abortion were ended, the TFR would be likely to rise immediately and remain above the replacement rate at least through 2075 (see column (3) in table below).¹¹⁷

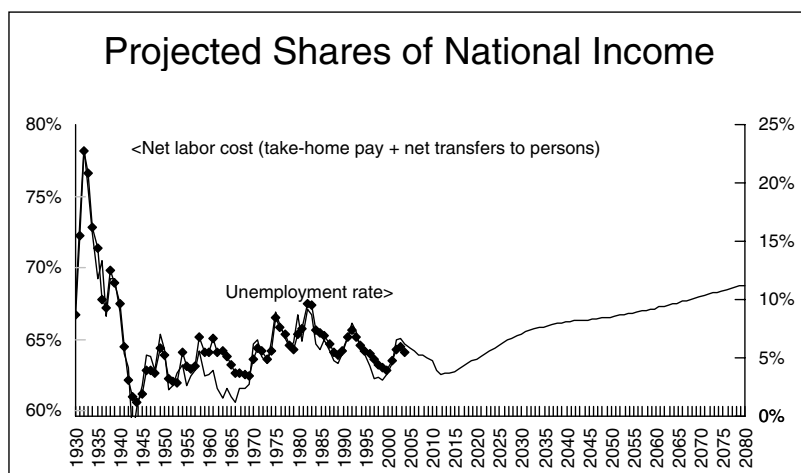
117. See John D. Mueller, *The Socioeconomic Costs of Roe v. Wade*, FAMILY POLICY, Mar.-Apr. 2000, at 3, available at http://www.eppc.org/docLib/20050328_Mueller3.pdf.

Year	(1) Actual TFR and model with projected benefit share at 2001 incomes	(2) Actual and projected TFR with projected benefit share at projected incomes	(3) Actual and projected TFR, same as (2) without legal abortion	(4) Memo: SSA Trustees TFR, Inter-mediate Assumptions
2001 actual	2.05	2.05	2.05	2.05
2025 est.	1.98	1.87	2.51	1.95
2050 est.	1.92	1.73	2.35	1.95
2075 est.	1.87	1.60	2.22	1.95

Second, the relationships we have found between transfer payments and labor market employment suggest that the labor market employment of men would continue to decline, from 69.2% in 2004 to about 58% by 2075. But the labor market employment of women would likely increase from 56% in 2004, exceed the men's rate, and reach about 63% by 2030 before leveling off.



Third, under current law (as interpreted by CBO), the net labor cost in the American economy is likely to decline until 2015, but then rise steadily through 2075. The rise in the net labor cost is due to the projected increases in transfer payments as a share of the economy, which under current law are expected to be funded by borrowing. This suggests that the unemployment rate would rise over time from 4% in 2000 and 5.5% in 2004 to about 6% in 2025, 9% in 2050, and about 11% in 2075.



Year	Transfer payments, share of national income	Men employed in labor market	Women employed in labor market	Net labor cost, current law	Unemployment rate, actual & projected with current law
2000 actual	8.8%	71.9%	57.5%	62.6%	4.0%
2004 actual	9.8%	69.2%	56.0%	64.9%	5.5%
2025 projected	12.8%	63.5%	63.1%	64.6%	6.2%
2050 projected	14.4%	60.2%	64.3%	66.5%	8.9%
2075 projected	16.1%	57.4%	63.5%	68.4%	11.2%

The analysis leads to two important conclusions. First, if social benefits increase as a share of national income as projected under current policy, and are funded either by borrowing or by the income tax, the unemployment rate will rise as it has in Europe, and as a result U.S. national income will fall further below its productive capacity. Second, both allowing social benefits to mushroom as a share of the economy (as Democrats propose) and forcing workers to save more by shifting the tax burden from income to payroll taxes (as Republicans propose) would tip fertility below the current replacement rate of about 2.1 children per couple, to as low as 1.6 by 2075. Therefore, to avoid an increase in unemployment and a fall in population, social benefits must not increase significantly as a share of national income and must continue to be financed by taxes on labor income, while general government is funded by an income tax that falls equally on labor and property income.

NET TOTAL FERTILITY RATE: PREDICTED V. ACTUAL, 2001

Region	Country	Net TFR predicted	Actual net TFR, 2001
America: North	United States	2.05	2.05
	Canada	1.74	1.60
	Mexico	2.42	2.60
America: South	Argentina	2.10	2.42
	Brazil	2.33	2.06
	Chile	2.18	2.15
	Peru	2.80	2.93
	Uruguay	2.26	2.35
	Venezuela	2.77	2.44
Europe: Northern	Denmark	1.64	1.73
	Estonia	1.45	1.20
	Finland	1.68	1.70
	Iceland	1.76	2.01
	Ireland	2.07	1.89
	Latvia	1.55	1.13
	Lithuania	1.35	1.36
	Norway	1.56	1.81
	Sweden	1.75	1.53
	United Kingdom	2.12	1.72
Europe: Western	Austria	1.31	1.39
	Belgium	1.47	1.61
	France	1.26	1.75
	Germany	1.40	1.38
	Netherlands	1.60	1.65
	Switzerland	1.33	1.47
Europe: Eastern	Belarus	1.10	1.26
	Bulgaria	1.43	1.12
	Czech Republic	0.87	1.18
	Hungary	1.24	1.24
	Poland	1.65	1.36
	Romania	1.65	1.33
	Russian Federation	1.07	1.25
	Ukraine	1.34	1.27
Europe: Southern	Croatia	1.17	1.93
	Slovak Republic	1.49	1.24
	Greece	1.43	1.33
	Italy	1.57	1.18
	Portugal	1.85	1.48
	Slovenia	0.87	1.28

	Spain	1.46	1.15
Africa	Nigeria	4.34	5.46
	South Africa	2.34	2.37
Asia/Oceania	Australia	1.63	1.76
	China PR	1.76	1.79
	India	3.17	2.97
	Israel	2.57	2.56
	Japan	1.01	1.41
	Korea (South)	1.85	1.72
	Phillippines	3.68	3.39
	Turkey	2.50	2.08