Veiled Repression: Mainstream Economics, Capital Theory, and the Distributions of Income and Wealth

Lance Taylor[1]

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ABSTRACT

The Cambridge UK vs USA capital theory debates of the 1960s showed that the workhorse mainstream growth model relies on unsustainable assumptions. Its standard interpretation is not consistent with the last four decades of data. Part of an estimated increase in the ratio of personal wealth to income in recent years is due to higher asset prices. The other side of the accounts reveals that financialization and growing business debt partially offset the greater net worth of households. Attempts to interpret growth in wealth principally as a consequence of capitalization of rents are misleading. An alternative growth model based on Cambridge ideas can help correct these misinterpretations.

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[1] New School for Social Research.

In the USA, thanks to the Occupy movement, Thomas Piketty's *Capital in the Twenty-First Century* (2014), and Senator Bernie Sanders, questions about the distributions of income and especially wealth are now fully in the public eye.

These issues came up long ago in the small recondite world of the theory of capital. They were front and center in the 1960s in a fierce debate that raged between economists at the University of Cambridge in the UK and opponents at MIT in the USA. The subtext, for Cambridge UK at least, was that economic structure responds to power relationships and class. MIT on the other hand traced the cause of inequality to market forces.

The British "won" the theory debate, but lost the profession.[1] Mainstream missteps in interpreting distribution and economic growth were a natural consequence. Three of them plus a possible resolution are summarized here. Market-based explanations for inequality are not fully convincing, and divert attention from social and political concerns. In a nutshell, the Cambridge debates showed that the workhorse mainstream growth model relies on unsustainable assumptions. Its standard interpretation, moreover, is not consistent with the last four decades of data.

Part of the increase in the ratio of *personal* wealth to income that Piketty reports is due to higher asset prices. The other side of the accounts reveals that financialization and growing business debt partially offset greater net worth of households. Team Piketty overstated increases in national wealth.

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[1] When they surface today, results of the controversy are often misstated. For example, the economics commentator John Kay wrote in the *Financial Times* (October 6, 2015) that "Robert Solow [from MIT] won easily because of the care he took to specify … his models" and that the other side was led by the "Cambridge Marxist economist Joan Robinson." In fact Solow's colleague Paul Samuelson (1966) graciously conceded that MIT was wrong. Even so, macroeconomic courses at leading US departments continued to be based on the theory that failed. MIT's canonical textbook by Olivier Blanchard and Stanley Fischer (1989) did not bother to mention the controversy. Joan Robinson was a left Keynesian, not a Marxist, and a full professor at Cambridge. The classic reference is G. C. Harcourt (1972).

Along similar lines, attempts to interpret growth in wealth as a consequence of capitalization of rents are misleading. The mainstream overstated the numbers for "capitalized rent."

Finally, an alternative growth model based on Cambridge ideas can help correct the first two problems, and shed light on the third.

Detailed arguments are first presented, and then summarized in a concluding section.

Macro distribution and growth

Current interest concentrates on how income and wealth are distributed across households classified by the *size* of their holdings. Macroeconomic growth and capital theories, on the other hand, focus on the nature or *function* of payments flows, assets, and liabilities. We can say something about size distributions on the basis of functional distinctions, but the inferences can be tricky. Let's start with distribution as treated in macro theories, and later look at extensions toward size.

Current orthodoxy took form 60 years ago in a powerful paper by Solow (1956).[2] In his book, Piketty organizes the narrative around the Solow model. It rests on strong assumptions. The list includes (i) labor (L) and capital (K) can be measured unambiguously and are fully employed; (ii) output (X, e.g. "real" GDP) is determined from the supply side by an "aggregate production function" based on L and K; (iii) both inputs are subject to decreasing returns to scale in production; (iv) growth of K is determined by saving;[3] and (v) growth of the labor supply and employment is set by exogenous population dynamics.

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[2] The Australian economist Trevor Swan (1956) independently invented the same model.
[3] In his *General Theory*, Cambridge's preeminent economist John Maynard Keynes (1936) dismissively labeled this assertion Say's Law after an early 19th century French scholar. The Law states that any excess of income over consumption and taxes somehow gets automatically translated into an increase in the capital stock. For example, savings newly deposited in a bank immediately get lent to a firm to purchase new equipment or to a contractor to build a house.

Finally, because of diminishing returns, the "marginal product" of an extra unit of capital decreases when the capital/labor ratio K/L goes up. Following an ancient recipe concocted by the American economic Darwinist John Bates Clark (1908) the marginal product is equal to the profit rate (say r). In other words, a high level of the capital/labor ratio implies that r will be low, the real wage (say ω) will be high, and presumably the income distribution will be egalitarian.

Capital theorists (not to mention engineers or architects designing factories or housing) have always focused on how producers minimize costs of production utilizing labor and capital. The Cambridge UK vs USA debate centered on least cost "techniques" for combining different sets of capital goods as the rate of profit changes. The production cost of each good depends on r along with the prices of the other goods so the interactions are complicated. After the dust had settled, all participants agreed that the same technique could be cheapest to deploy at two or more different levels of r, with other techniques being optimal in between. So there is no clear relationship between the total value of capital and r. In general, Clark and Solow's (as well as Piketty's) key assumption about how r and ω respond to the "size" of the capital stock does not apply.

Less esoterically, Solow's narrative does not fit the past three or four decades of US data. The usual model scenario is that that capital/labor ratio starts from a low level and rises. Along Clark's lines, r falls and ω goes up. Producers respond to the lower profit rate by using more capital so that the output/capital ratio $u = X/K$ goes down.

Figure 1 shows that across US business cycles (recessions are shaded) u has in fact

drifted upward and r has risen. The real wage has at best has been stable.[4] This history is

consistent with the Solow model *running in reverse.* The economy has "too much" capital per

worker. The $K/X, K/L$ and X/L ratios gradually run down as the system converges toward a

"natural" growth rate set by expansion of the fully employed labor force. Given the state of

infrastructure in the USA, this interpretation looks absurd. With an assist from Karl Marx, a

more plausible interpretation of recent trends is presented below.

Figure 1

The *share* of profits (π) in output is given by the formula $\pi = r/u$. The diagram shows

that it varies pro-cyclically, and increased on trend after 1980. In the Solow model, π can go up

if r rises more than in proportion to u, as occurs when a parameter called the elasticity of

substitution of the production function lies between zero and one. Standard econometrics

supports a low value of the elasticity, but Piketty wants it to exceed unity. You can't have it both

ways.[5]

Distribution of wealth

Piketty and Piketty and Zucman (2014) deal with wealth of households, with emphasis on

the effects of rising asset prices. The background is that for any group of economic actors their

accumulation is given by

Change in wealth = Net saving + Capital gains   .   (1)

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[4] The calculation of u relies on the rough-and-ready estimate of K used in the US national income and financial accounts. Details below.

[5] In any case, the elasticity is a messy mélange of productivity, distributive, demographic, and demand shifts (Nelson Barbosa-Filho, forthcoming) – not a useful parameter.

Net saving is total saving (income – consumption – taxes) minus depreciation. Capital gains are increases in the prices of assets that the group holds.

Piketty and Zucman argue that close to 30% of the increase in household net worth over recent decades has been due to increases in prices of equity and housing (especially the latter). There are reasons to question these results. Even if true, in the USA they accompanied reductions in wealth for business. On the basis of standard accounting conventions capital gains on one side of the private sector ledger went along with more debt and falling net worth on the other.

This conclusion follows because *total* net worth of the private sector is given by

Household wealth + business wealth

 = Capital + Government debt + Net foreign assets   (2)

with capital as by far the biggest entry on the right-hand side.

For given total wealth, if household net worth goes up, then business net worth must go down. On the other hand, if the value of capital rises, then private sector wealth must increase as well. Whether households or business benefits is not immediately clear.

To follow the details we have to drop the assumption in growth models that "households" made up of human beings directly own all the capital stock. In fact, their wealth or net worth comprises a big collection of disparate assets less liabilities. Figure 2 provides a highly simplified schema in the form of "T-accounts" or balance sheets for households, (corporate) business, the government, and the financial sector (the rest of the world is ignored). For each sector, the value of assets is on the left, liabilities and net worth on the right.

Figure 2

Households hold physical capital (residences, basically), equity issued by business and finance, bonds from business and the government, and money. They also hold diverse financial products such as mutual funds, insurance, pension plans, and options labeled here as "funds." They owe debt (mostly mortgages) to finance, and have positive wealth or net worth.

Business holds productive capital (plant and equipment along with inventories). In macro accounts, their outstanding equity is reckoned as a liability along with bonds. As will be seen, business net worth in the USA is typically negative because the value of their outstanding equity exceeds the value of their capital stock.

Government holds capital (infrastructure) and issues bonds. Its net worth is negative. As noted in (2) above, the bonds contribute to net worth of the private sector (mostly households).

The private financial sector holds debt and "base money" issued by the central bank (nowadays greatly exceeding money held by households due to quantitative easing over the past few years). Traditionally, banks within the sector offered deposits and made loans to business and households. But since the 1970s there has been an eruption of new instruments, some held by households (funds). But there are also major transactions *within* finance, for short here called "repo" (for repurchase agreement or a form of loan) and "reverse repo." In practice, assets and liabilities of the financial sector are nearly equal and both trended up from around 40% of total wealth in 1980 to over 120% today.[6]

A path into Figure 1's financial thicket is offered by the national accounts, which state that[7]

Total profits ≈ Financial transfers to households + Business saving .   (3)

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[6] Perry Mehrling's (2010) *New Lombard Street* is a useful summary of the current state of finance.

[7] The "≈" signals that equality is only approximate (to roughly three significant digits) because of minor transfers not intermediated via claims in the financial system.

That is, corporate earnings are distributed to households as interest and dividends or else retained within business. This saving including depreciation ("capital consumption allowances" or CCA in national accounts jargon) runs around 10% of GDP. Net of depreciation, the saving flow is in the range of one or two percent.

How do households get their hands on profits embodied in business net saving? The answer is capital gains on equity, boosted in the recent period by share buybacks (often financed by higher business debt). Of the traditional seven percent "long run" return to US equity, over half is made up by asset price increases plus buybacks, and the rest by dividends.

Figure 3 presents data on all realized capital gains (including residential housing) since the mid-1980s. On the whole, yearly gains by households are greater than net business saving. Sums exceeding profits are transferred to households via financial flows and asset price changes, running down firms' net worth.

Figure 3

What forces *cause* capital gains is a vexed and open issue. As discussed below, capitalization of rents may enter the process by driving up property valuations which get channeled to owner households. Low interest rates beginning in the mid-2000s contributed. A more fundamental factor is the corporate governance philosophy of maximizing shareholder value (and one might add the strategy of executives paid in the form of stock options to run up business debt to retire their companies' shares to prop their option values up). Share buybacks were around a trillion dollars in 2015.

A snapshot of the US wealth distribution for 2012 appears in Figure 4, based on a capital stock series from the Bureau of Economic Analysis, the Federal Reserve's Financial Accounts,

and Edward Wolff's (2012) breakdown of the size distribution of holdings which comprise physical capital, the value of equity, and other financial instruments ("bonds"). Assets held by each group of actors have a negative sign; liabilities and net worth are positive. The numbers don't add up --reported holdings of bonds by households and finance exceed the supply from firms, government, and the rest of the world.

Figure 4

The capital stock breakdown in the first column is a skeleton key to interpreting the balance sheets. As noted above, capital theory has always been about costs. The standard procedure for estimating the capital stock, called the "perpetual inventory" method, does not take Cambridge complications into account, but at least it does examine the costs of producing new capital goods and how rapidly they depreciate in use. The capital numbers used above and displayed in Figure 4 come from this approach.

Consistent with the data on flows in Figure 3, they show that the business sector has negative wealth. The value of equity outstanding ($29,483 trillion) substantially exceeds firms' capital stock ($19,903 trillion). Debt of almost two trillion pushes business further into the red. The sector's negative net worth of -$11,354 trillion offsets 16% of household wealth, or half the contribution Piketty and Zucman attribute to capital gains.

Piketty and colleagues sidestep this problem by using stock market valuations directly to estimate the amount of the capital stock. To see if this procedure makes sense, we have to take a detour into corporate finance theory. In a subtle argument, Fischer Black and Myron Scholes (1973) point out that a share is really an option on the value of a firm if it closes down at some future time. Its physical capital can be sold, presumably in line with its original cost less

depreciation, and bondholders must be paid off. Equity owners "share" the remainder which may well be less than the value of stock outstanding.

To offset this differential, large amounts of "intangible capital" must be conjured into existence if K is to be valued using share prices. In terms of Figure 4, if the absolute levels of capital are raised to approach the value of equity, then net worth of both households and (especially) firms can go up. Ratios of personal wealth to income can skyrocket, Piketty's famous claim.[8]

This configuration of wealth-holding is not inevitable. Coming out of World War II and into the 1960s American corporations had positive net worth with capital estimated by perpetual inventory. Till van Treeck (2015) points out that even today German business has positive net worth stemming from profits created by the economy's consistent trade surplus, and explores the implications. Unsurprisingly in light of Figure 2's accounting, positive wealth in German business goes along with a low ratio of the value of equity to the capital stock – a fact that that surprises Piketty and Zucman.

For future reference we can take a quick look at ownership of capital in the table. Households in the table are split into the top 1% and the bottom 99% of holders of wealth (the 20%-80% split is also included for reference). The top 1% directly own 35.4% of household net worth, consistent with other estimates. They hold only 26.9% of household capital stock, basically residential housing (the top 20% hold 80.7%!). Households overall hold roughly one-third of capital, and business holds around one-half. The rest is owned by the government.

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[8] He is not cited by Piketty, but some time ago Robert Hall (1981) of Stanford's Hoover Institution came up with similar results in a very high tech paper.

We take up implications of this pattern of wealth-holdings below. But one final thought is that a continuing transfer *exceeding* net saving from business to households is unlikely to endure indefinitely.

The role of rent

Piketty and Joseph Stiglitz (2014) point to "capitalized rents" as a significant source of wealth inequality. Tracing back beyond Adam Smith, rent can be viewed as payment for the use of some asset. In other words it is a monopoly price, supported by ownership claims and a threat of coercion (legally sanctioned or otherwise).

The conditions that give rise to rent are often left unstated. One is that simple scarcity of some input into production (say agricultural land or oil in the ground) can give rise to non-zero payments from users to owners of the scarce resource.

Second, "rent-seeking" (Anne Krueger, 1974) is a favored vehicle for mainstream economists to bring class and power into discussion. Rents become claims on income associated with sociopolitical relationships which do not themselves create income. For example a firm bribes politicians to get legislation increasing its profits.[9] This version was popularized by Gordon Tullock (1967). Even he, however, emphasized difficulties in identifying rent-creating claims.

Finally, market power per se can move prices away from the values that would be observed in a "competitive" situation – this form of rent is the standard neoclassical version of exploitation. "Imperfect information" about how different classes of economic actors operate is a recent justification for the existence of market power.

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[9] Which relationships generate income is another tricky question. Import quotas are legally sanctioned public-private relationships often used to exemplify targets of rent-seeking. But they helped stimulate industrialization in Korea, so were they unproductive?

Rents, legitimate or not, become sources of wealth inequality if they are capitalized. Suppose that some rental *flow* ρ is associated with the *stock* of an asset – just how ρ gets determined is usually left unexplained. If there is a "perfect" capital market for the asset in question (land, politically sanctioned diversions of income, whatever) then its value will be $V = \rho/r$ with r coming from the macroeconomic marginal conditions. Of course, for a given ρ, V gets bigger when the profit rate goes down. Total wealth Ω is now given by $\Omega = K + V$ which seemingly can be arbitrarily large.[10]

The crucial question is how rents can be measured. They are payment flows *within* the macro system – money changes hands. For better or worse, Piketty pulled Jane Austen into the discussion so let's use Pemberley as an illustration of scarcity rent. Mr (and eventually Mrs) Darcy's income of £10,000 came from rents on 10,000 acres of cropland around Pemberley House. Rents were based on sales of grain at a relatively high price before repeal of the Corn Laws and later massive imports from the USA and Ukraine. The Darcys flourished financially from a big payment flow in the political economy of their time. Large landowners as a class did well because agriculture made up half of economic activity as opposed to a few percent at present.

What is the role of rents today? Because they are transactions within the system, in principle they should show up in the national accounts. The problem is that they are not large. In the US numbers agriculture is tiny and rents on housing are a few percent of GDP (although they have trended upward since 2000). The political economy is that rather than being driven by a robust agricultural sector as with the Darcys, high land rent currently is a consequence of asset accumulation supported by other sources of income, e.g Manhattan's new "billionaires' row" on

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[10] Of course any widespread attempt to sell assets would immediately drive down prices and destroy wealth. We learned all about that during the financial crisis.

57th street supposedly is financed by foreign and Wall Street fortunes. Shifting assets from other sources into 1000-foot towers does not constitute creation of new wealth. A similar observation applies to "resource rents" in a few raw material exporting countries. They reflect the transformation of resources in the earth into financial wealth.

In the USA, if you capitalize a rental flow of five percent of GDP five percent, you find a level of wealth equal to one year's GDP.[11] In Figure 3, that is roughly the value of US residential housing, estimated using perpetual inventory. Stiglitz presents a numerical example in which rents are 30% of output of other goods plus rental income. What country does he have in mind? With oil rents, Iran and Kazakhstan come close.

Stiglitz also attributes rising corporate profits to monopoly power. Figure 1 suggests that the profit share has increased by a few percentage points over the last 40 years. If this increase is capitalized, it would represent less than one year's worth of GDP. Along with the other forces mentioned above, more robust monopoly rents could have contributed to the high valuation of equity in Figure 4, but it is unlikely to have dominated the asset price trend.

Back to Cambridge

There are two further strands of theory from Cambridge University that illustrate distribution today. One is about determination of output and the profit share in the short to medium run. The other sheds light on the long-run distribution of wealth. Both emerge from a non-Say's Law demand-driven model of growth.

The assumptions underlying the models are the following: (i) labor and capital can be measured unambiguously but they are *not* fully employed; (ii) output is determined by effective demand, which brings saving into line with the sum of investment, the fiscal deficit, and the

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[11] The basis of the "five percent" estimate is weak, but it *is* constrained by the overall consistency of the national accounting system.

trade surplus; (iii) employment is set by output divided by labor productivity; (iv) capital does not directly affect output but does serve to scale the system; (v) growth of capital is determined by investment; (vi) the class-based functional income distribution is set by conflict or competition between workers and business; and (vii) saving and investment depend on the income distribution.

Marx throws light on distribution, in contrast to the Solow-model explanation of recent trends discussed above. In several passages in *Capital*, he sketched a theory of business cycles (a century later formalized by the American-born Cambridge economist Richard Goodwin, 1967) pivoting on shifts in the income distribution. At the bottom of a cycle, the real wage is held down by a large reserve army of un- or under-employed workers, and capitalists can accumulate freely. However, as output expands the reserve army is depleted as capital utilization u goes up. The real wage rises in response to a tighter labor market, forcing a profit squeeze. The "Conflict" schedule in Figure 5 illustrates this linkage from u to π.

Figure 5

The other side of Marx-Goodwin macroeconomic adjustment is a positive effect of π on u, operating though investment demand or exports, illustrated by the "Demand" curve in Figure 5. Initially, medium-run macro equilibrium is at point F, with π and u following clockwise cycles around it.[12]

The diagram provides a plausible explanation for the trends mentioned above – rising u and π, falling or stable ω. Simply put, in the USA the $\pi(u)$ schedule drifted upward for the past 30 or 40 years – the profit squeeze mechanism still exists but has become weaker. One can see

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[12] For details see Nelson Barbosa-Filho and Lance Taylor (2006), who work with the wage as opposed to the profit share. Cycles in π and u are evident in Figure 1.

this pattern in the data. The labor share $\psi = 1 - \pi$, and in turn $\psi = \quad / \xi$ where $\xi = X/L$ is labor productivity. Because of shifts in labor market institutions ω has been stable while ξ has increased, shifting the functional income distribution toward profits and stimulating demand. The economy has moved from point F to G.

If we maintain the growth theory convention that all capital is owned by households, medium run macroeconomics extends to a "long run" steady state as formulated in Cambridge's Luigi Pasinetti (1962, 1974). The emphasis is on how saving supported by existing asset holdings feeds into their growth. Intangible capital and evanescent rents do not figure in the discussion.

Pasinetti assumes that there are two distinct classes – "capitalists" and "workers." Their respective saving rates are s_c and s_w with $s_c > s_w$. Capitalists receive profits rK_c from the capital K_c that they own, while workers get the rest of income.

Steady state growth means that all relevant variables increase at the same exponential rate g. One can show that the Marx-Goodwin model just sketched will converge to a steady state. Once there, for all variables the ratios of their increases to their levels must be the same. Two useful formulas follow.

One is Pasinetti's elegant relationship

$$s_c r = g \tag{4}$$

which shows that the capitalists' saving rate mediates the magnitudes of the growth and profit rates. With $s_c < 1$ we already have $r > g$, an inequality which Piketty emphasizes. It follows from proper steady state accounting, which he does not discuss.

Second, let $Z = K_c/K$ be the capitalists' share of total capital. In steady state, one can show that

$$1 - Z = [s_w/(s_c - s_w)] [(1 - \pi)/\pi] \quad . \tag{5}$$

Shares of wealth in the long run are intimately related to the distribution of income between profits and wages, and thereby social change and redistributive policy. The workers' share of capital, $1 - Z$, increases with s_w and decreases with s_c and π. The former effect reflects James Meade's (1964) observation that wages are a potential source of saving unavailable to rentiers, setting an upper limit to Z. A corollary is that because of their different sources of income both classes will co-exist in steady state.

Meade's argument shows that Z will not rise to a value of one. Capitalists' wealth cannot expand indefinitely, as Piketty seems to imply. Even so, the upper bound may be high. Plausible numbers are $s_c = 0.5$, $s_w = 0.1$, and $\pi = 0.4$. These numbers generate a steady state value for Z of 0.625, well above the level of 0.4 that most authors calculate today.

Pasinetti's world is abstract – in practice there are no "pure" capitalists and workers. Nevertheless households in the top one percent in the USA are not a bad approximation to a capitalist class. Following Lance Taylor, Ozlem Omer, and Armon Rezai (2015), Figure 6 summarizes their *mean* income levels per household over time – late in the decade it was more than $2 million per year. The green segments toward the bottom of the bars show that the well-off did receive growing pre-tax income from labor compensation, around seven percent of the total economy-wide. But bigger chunks come from interest and dividends along with rents and proprietors' incomes like lawyers' fees. Capital gains were substantial in many years. We can treat the upper one percent as approximating abstract Pasinetti capitalists.

Figure 6

Simulations of possible growth paths in a numerical version of the models just sketched suggest that it would be very difficult to *reduce* income and wealth inequality significantly just by using policy measures such as taxes on upper incomes, capital gains, or net worth. These conclusions are built into national income and financial accounting numbers with proper attention to dynamics. William Gale, Melissa Kearney, and Peter Orzag (2015) got such results regarding income a year or so after Taylor, et.al. (2015) and earlier papers.

With regard to wealth, Andrew Mellon, Secretary of the Treasury under the string of Republican presidents in the 1920s, said that "During a Depression, assets return to their rightful owners." In fact, he was wrong. Under almost all circumstances, assets move toward "rightful" households who already hold a preponderant share. To get that share back below the current 40% and keep it there, the market needs an actor with countervailing power against the accumulation of the very rich. Creation of an institution such as a public wealth fund to out-save the savers would be required to mitigate their control of national net worth.

In the short run income inequality can be reduced by one-shot measures such as boosting low wages or raising taxes at the top. But even if applied aggressively these moves will *not* erase income differentials between the rich and the poor or middle class *unless* new resources can be directed toward lower income households. Higher labor productivity (output per person-hour) can provide such a flow of resources. As noted above, after 1980 US productivity gains favored the top one percent because wage growth did not keep up. Economic surplus moved from almost all other households toward the very rich. Reversing the flow would take substantial intervention into labor relations.

Bottom lines

A few key conclusions stand out.

An economic growth model must be the backbone of any attempt to analyze distributional changes over time. If the value of capital is estimated on the basis of cost, then it has no clear relationship with the profit rate, as the Cambridge controversies showed long ago. Consequently, the mainstream Solow growth model which postulates diminishing returns to capital is untenable. Even in use, moreover, the model's narrative of steady decreases in the output/capital ratio and profit rate does not fit the data (see Figure 1).

Growth models usually presume that households own (or at least control) the entire capital stock. In fact they basically own residential capital plus a complicated set of claims against business (which owns productive capital), the government (infrastructure) and the rest of the world. Consolidating the bookkeeping for net worth of the private (household and business) sector shows that

Household wealth + business wealth

= Capital + Government debt + Net foreign assets .

Shifts in such a system need to be analyzed in terms of both the *stocks* involved and their changes (or *flows*) over time. In flow terms for each sector it must be true that

Change in wealth = Net saving + Capital gains   .

Within the private sector, double entry national income flow accounting assures that

Total profits ≈ Financial transfers to households + Business saving

in which financial transfers are net interest and dividend flows.

If households are to control all capital, the question is how do they get their hands on the fruits of business saving? The answer is that capital gains on equity and housing in the USA typically *exceed* business saving net of depreciation. Control of capital passes to households via capital gains for them and capital losses for business. (This pattern is not universal; it is not

observed in Germany, where there are low equity valuations relative to capital and positive business net worth.)

In the recent debate, a key question is *how* to estimate the value of capital. Ignoring Cambridge complications, the widely applied "perpetual inventory" method calculates the costs of producing new capital goods and takes into account how rapidly they depreciate in use. For the USA, outstanding business equity exceeds the perpetual inventory estimate of capital. Business has negative net worth, consistent with yearly increases in the value of equity exceeding net business saving.

Another approach, adopted by Piketty, is to estimate the value of capital on the basis of stock market valuations. "Intangible capital" (whatever that is) then explains a substantial increase over perpetual inventory estimates. With a high enough value of capital, household wealth can be large and business wealth near zero. "Capital is back" largely because equity-based estimation makes it happen.

Somewhat similar observations apply to the valuation of residential capital. Here the options are perpetual inventory vs. capitalization of "rents," whether legitimate or the results of monopoly power, political clout, or corruption. New billionaires' towers along Manhattan's 57th street notwithstanding, capitalization of rental flows as estimated in the national accounts yields estimates of residential capital in the range of one year's GDP, roughly the same as perpetual inventory calculations.

Similarly, Figure 1 shows that the profit share of output has risen by around five percent, basically because labor productivity growth has outrun the growth of real wages. Capitalizing that extra business income again leads to a modest increase in the value of capital.

Finally, applying Cambridge-style models suggests three conclusions.

First, increases over recent decades of the profit share and output/capital ratio can be rationalized on the basis of a structural distributive shift toward profits in a demand-driven model in which there is a weakening profit squeeze as output goes up, and the level of output rises with higher profits.

Second, extending the analysis to the long run shows that there is an upper bound to the share of wealth held by "capitalists" because they do not control saving from wage income.

Third, households in the top one percent in the USA largely rely on capital income. Simulations suggest that their share of wealth is not likely to decline in response to fiscal interventions alone. Creation of an independent public wealth fund could lead to greater equality. Similarly, once-off tax/transfer packages or wage increases will not reduce income inequality significantly; on-going wage increases in excess of productivity growth would be needed.

It *is* possible to reduce US wealth and income disparity, but reversing unequalizing trends for the past 30 or 40 years will not be easy or quick.

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**Figure 1: US capital utilization, profit share, and profit rate.**
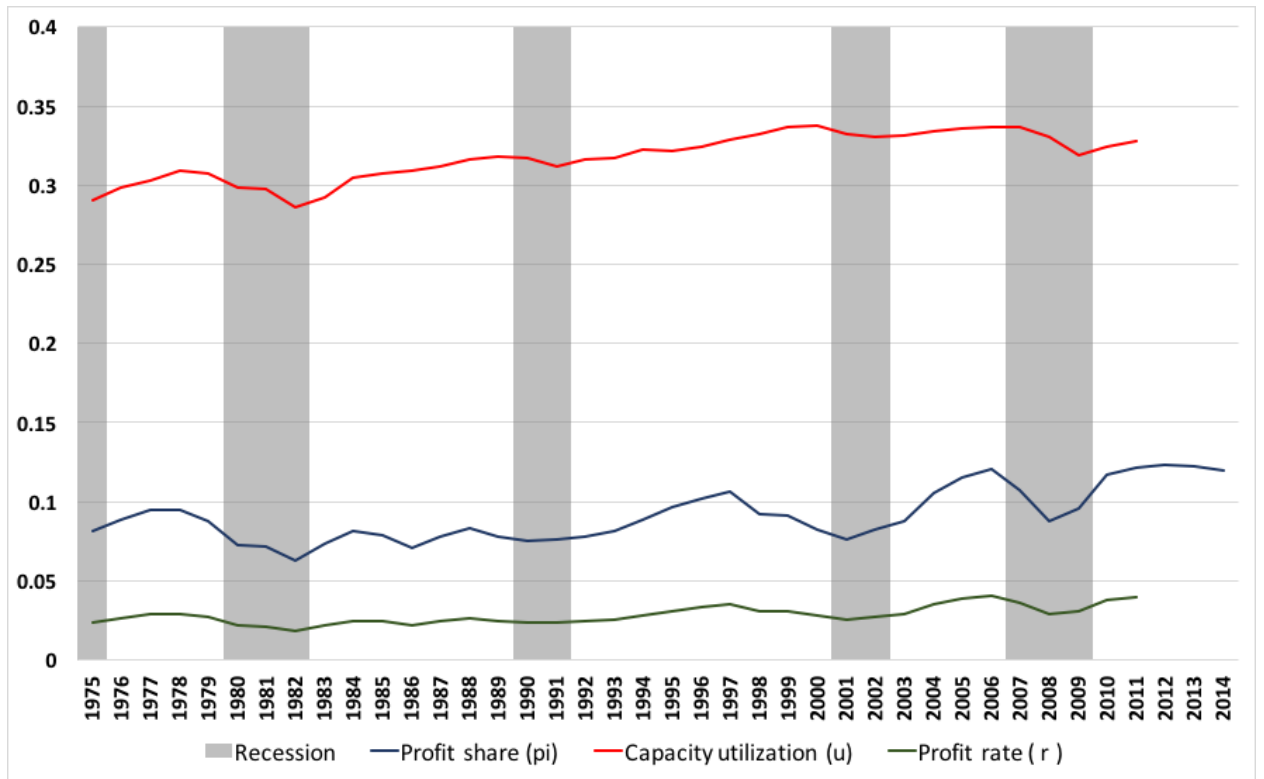
Figure 2: Stylized balance sheets for the US economy

Households		**Business**	

Capital(h)	Debt(h)	Capital(b)	Equity(b)
Equity	Net worth (h)		Bonds(b)
Bonds			Debt(b)
Money			Net worth (b)
Funds			

Government		**Finance**	

Capital(g)	Bonds(g)	Reverse repo	Repo
	Net worth(g)	Debt	Money
		Base money	Funds
			Equity(f)

Central Bank

Base money

Balances: Bonds   = Bonds(b)   + Bonds(g)
Capital = Capital(h) + Capital(b) + Capital(g)
Equity = Equity(b)   + Equity(f)
Debt   = Debt(h)   + Debt(b)

Figure 3: Net business saving, business depreciation, and household capital gains
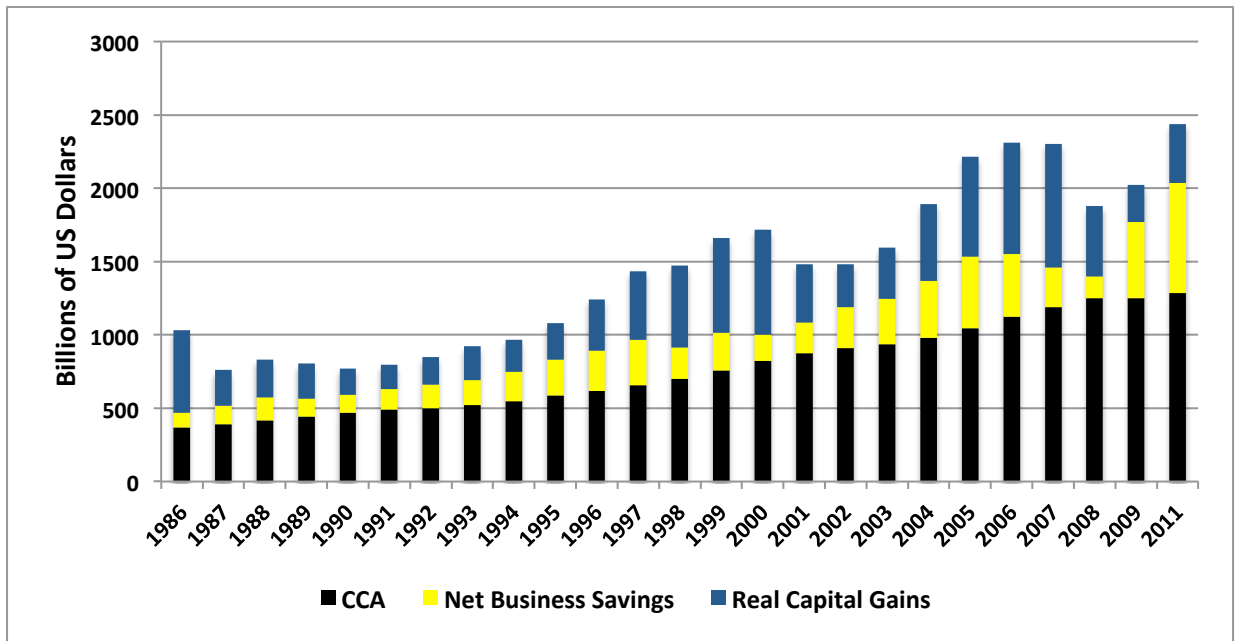
Figure 4: US assets (-) vs. liabilities (+) divided into capital stock, bonds and equity, and net worth by sector and household income groups, 2012. Levels in US$ billions

	Capital	Bonds	Equity	Net worth
All HH	-16312.3	-23769.1	-28960.5	69041.9
Lower 80%	-3154.7	-3176.8	-1332.2	7663.7
Upper 20%	-13157.6	-20592.3	-27628.3	61378.2
Lower 99%	-11923.1	-15909.8	-16768.1	44601.1
Upper 1%	-4389.2	-7859.3	-12192.4	24440.8
Firms	-19903.3	1774.7	29482.6	-11354.0
Gov't	-12508.0	16862.8	-279.9	-4074.9
Finance		-5131.6	-1047.2	6178.8
R.O.W.		3175.3	805.1	-3980.4
Col. sum	-48723.6	-7087.9	0.1	55811.4

Sources: Assets, liabilities, net worth from Financial Accounts (Federal Reserve, 2014); capital stock from Survey of Current Business (October, 2013), household groupings computed based on Wolff (2012).

Figure 5: Determination of the profit share π and capital utilization u. The dashed line shows the effect of an upward drift in the profit share.

Profit share π

$u(\pi)$ "Demand"

G

F

$\pi(u)$ "Conflict"

Capital utilization u
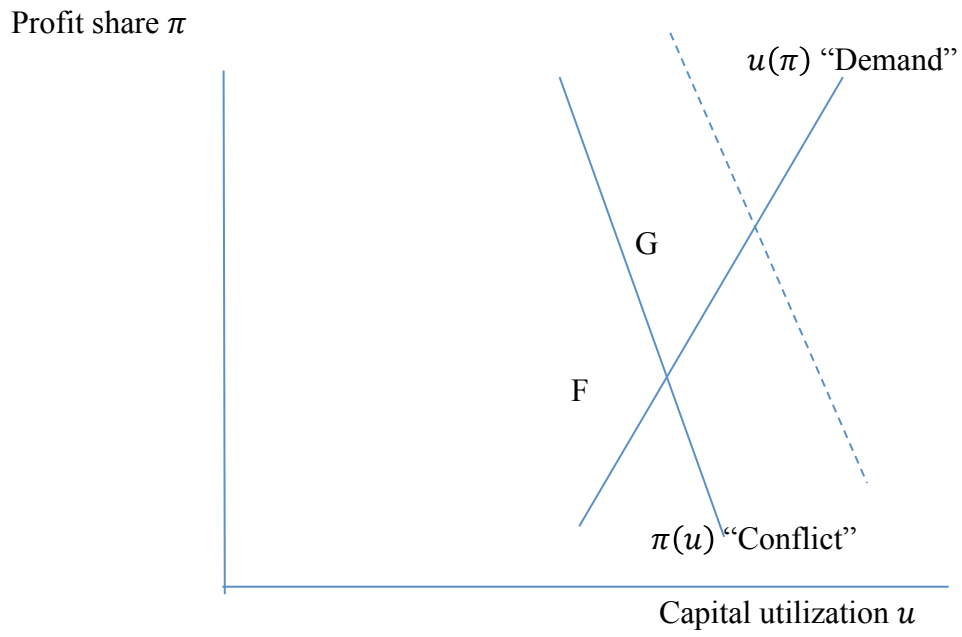
Figure 6. Real per household incomes top 1%