The Impact of Rent from Unequal Exchange on Shaikh's Classical-Keynesian Political Economic Analysis: the Example of Facebook

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May 6, 2019

Abstract:

(Shaikh, 2016, Chap. 14)'s 1949-2011 "Classical Phillips Curve" (CPC) is replicated and extended to 2016. Though this updated CPC confirms the deep structural change in the U.S. economy during the 1970-1980's revealed by Shaikh's 1949-2011 data, it does not follow the pattern anticipated by Shaikh for the years 2012-2016. This paper hypothesizes that this is a result of an increasingly "rentier" economy that deviates from patterns identified by Shaikh's classical political economy particularly with regard to surplus extraction through unequal exchange (UE). I show that this hypothesis is supported by detailed employment, profit share, and income distribution results. The later are derived by Shaikh and Ragab (2007) and discussed in (Shaikh, 2016, Chap. 17), though Shaikh does not make the link to rentierism. As an example microeconomic test for this hypothesis I apply a recently developed (Ricci 2018) methodology that uses "World Input Output Data" (WIOD) to measure total differential and absolute rent from between-industry and between-country within-industry UE for the 2014 US Advertising and Market Research (A&MR) sector. This analysis shows that UE accounts for $64.0 B, or almost a half (45.3%), of total US A&MR Value added ($141.3 B) in 2014. A modification of Ricci's methodology for firm level UE estimation finds that in 2014 Facebook alone was able to extract a within-industry, within-country between-firm absolute rent of $ 3,777 M. Based on this example and the additional evidence cited above, I conclude that UE has come to play a key role in an important developing sector of the US and world economy and that Shaikh's analysis needs to be extended with non-classical political economy UE, or "rentier economy", analysis. Though not addressed in this paper, the increasing importance of rent extraction in the global Finance, Insurance, and Real Estate (FIRE) sector is probably an even more important factor.

Introduction

Drawing extensively on the work of Smith, Ricardo, and Marx, Keynes and others, Anwar Shaikh has produced a masterwork (Shaikh, 2016) that includes a theoretical framework and abundant empirical evidence showing that this classical political economy-Keynesian based analysis can be applied to: consumer and firm behavior, competition, relative prices, finance, trade, growth, distribution, and inflation, across broad sectors of the economy. However, some aspects of Shaikh's classical political economic approach appear to require modification, especially when extended beyond 2011. In particular, the wage share and "unemployment intensity" (UI - or unemployment rate multiplied by unemployment duration) based "Classical Phillips Curve" (CPC) that forms the basis for what Shaikh calls "The General Classical System" (Appendix 14.1) shows a stable relationship between HP filtered wage share growth and UI for the period 1949 to 1983, but a downward shift after 1999, as shown in Figure 1 below.

Shaikh hypothesizes that this shift was a result of the Reagan-Thatcher repression of labor and dismantling of progressive redistribution in favor of policies causing regressive redistribution, and that this downward shifted CPC will apply to the post 1999 period. However data since 2011 suggests that this is not the case (see Figure 2 below) as the data show continued falling wage share and rising unemployment intensity until 2010 and then a slow decline in UI and rise in wage share growth thereafter but far to the right of the CPC curves postulated by Shaikh from 1949-2011 data. This paper hypothesizes that this is a result of an increasingly "rentier" economy that deviates from patterns identified by Shaikh's classical political economy particularly with regard to surplus extraction through unequal exchange (UE).I show that this hypothesis is supported by employment to population ratio trends and other macroeconomic data, as well as profit share and income distribution results derived by Shaikh and Ragab (2007) and also discussed in (Shaikh, 2016) in Chap. 17, though Shaikh does not make the link to rentierism.

As an example microeconomic test for this hypothesis I apply a recently developed (Ricci 2018) Marxist "New Interpretation" based methodology that uses "World Input Output Data" (WIOD) to measure total differential and absolute rent from between-industry and between-country within-industry UE for the 2014 US Advertising and Market Research (A&MR) sector. This analysis shows that UE accounts for $64.0 B, or almost a half (45.3%), of total US A&MR Value added ($141.3 B) in 2014. A modification of Ricci's methodology for firm level UE estimation finds that in 2014 Facebook alone was able to extract a within-industry, within-country between-firm absolute rent of $ 3,777 M.
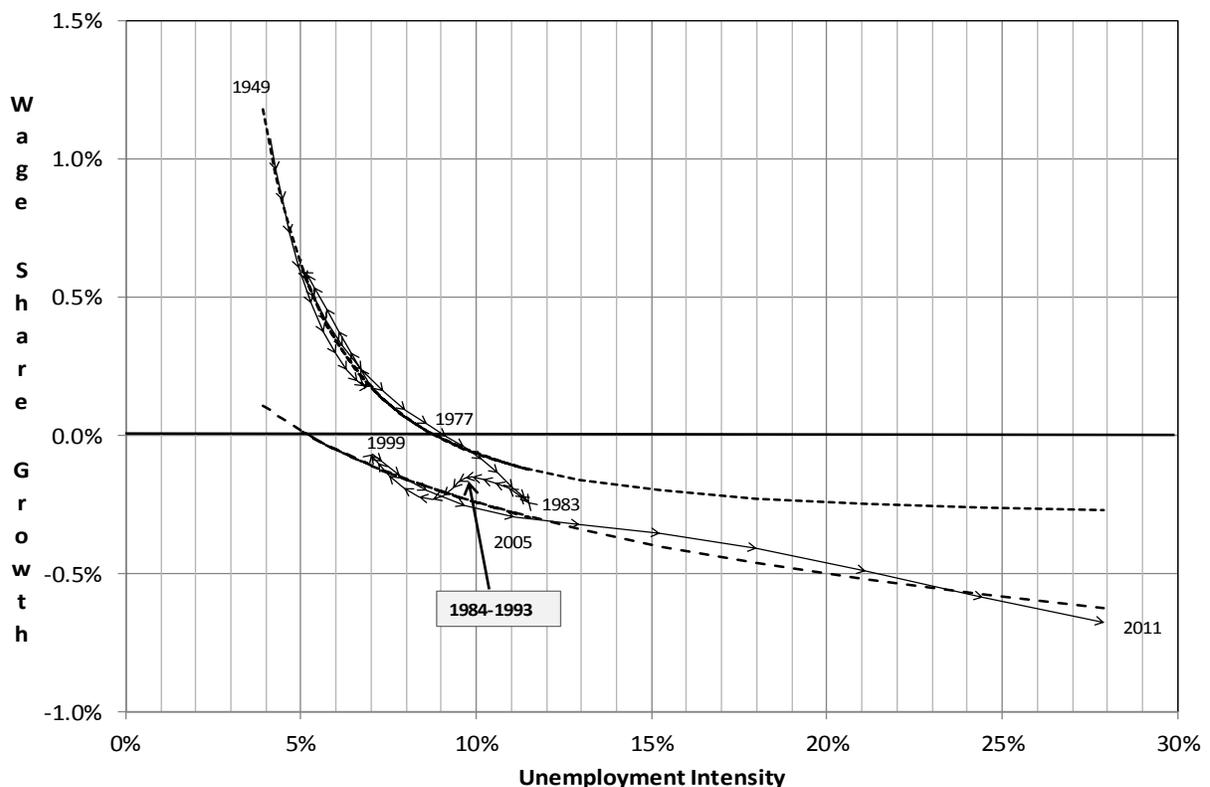
Based on this example and the additional evidence discussed below, I conclude that UE has come to play a key role in an important developing sector of the US and world economy and that Shaikh's analysis needs to be extended with non-classical political economy UE, or "rentier

economy", analysis. Though not addressed in this paper, the increasing importance of rent extraction in the global Finance, Insurance, and Real Estate (FIRE) sector is probably an even more important factor leading to rentier structural change in late capitalism (Hudson, 2015, 2012) (Baiman, 2014).

1. Shaikh's Classical Phillips Curve

Figure 1 below is a reproduction of Figure 14.14 on p. 667 of (Shaikh, 2016).

Figure 1: The Classical Phillips Curve:
U.S. Wage Share Growth and Unemployment Intensity 1949-2011 (Shaikh Figure 14.14)

Source: (Shaikh, 2016, Figure 14.14, p. 667)

In this graph: Wage Share Growth (WSG), on the vertical axis, is the annual growth in the ratio of total employment compensation divided by GDP, both in current dollars from the "Bureau of Economic Analysis"(BEA); and Unemployment Intensity (UI), on the horizontal axis, is an index of annual average weeks of unemployment multiplied by the annual average official unemployment rate, both from the "Bureau of Labor Statistics" (BLS). Both sets of data have been smoothed using an HP100 filter. As Shaikh notes it would be better to use a more accurate and comprehensive measure of unemployment such as the BLS U-6 or U-7 measures that include discouraged and involuntary part-time employment and (for U-7) also take into

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account unemployment duration, but these series only go back to 1994 (Shaikh, 2016, p. 663, fn. 9).

The Graph shows a clear break between the "Golden Age" curve of 1949-1983 and the "Neoliberal Period" curve of 1994-2011. The former period was characterized by mostly increased wage share growth and the later by declining wage share growth. Shaikh hypothesizes that the shift in the curve that took place during the 1984-1993 period was a result of the Reagan-Thatcher repression of labor, and dismantling of progressive redistribution in favor of policies causing regressive redistribution. Key factors might be the aggressive war against unions and precipitous decline in unionization rates, massive reduction in the top marginal income tax rates, the legalization of stock options as a form of executive pay, stopping enforcement of sanctions against employer hiring of undocumented immigrants, and continued deregulation of finance. The evidence presented by Shaikh strongly suggests that unless the ex-ante Golden Age balance of class power is restored to labor, the U.S. economy will suffer from a continued politically and economically unstable decline in labor share and deflationary or low inflation economy.
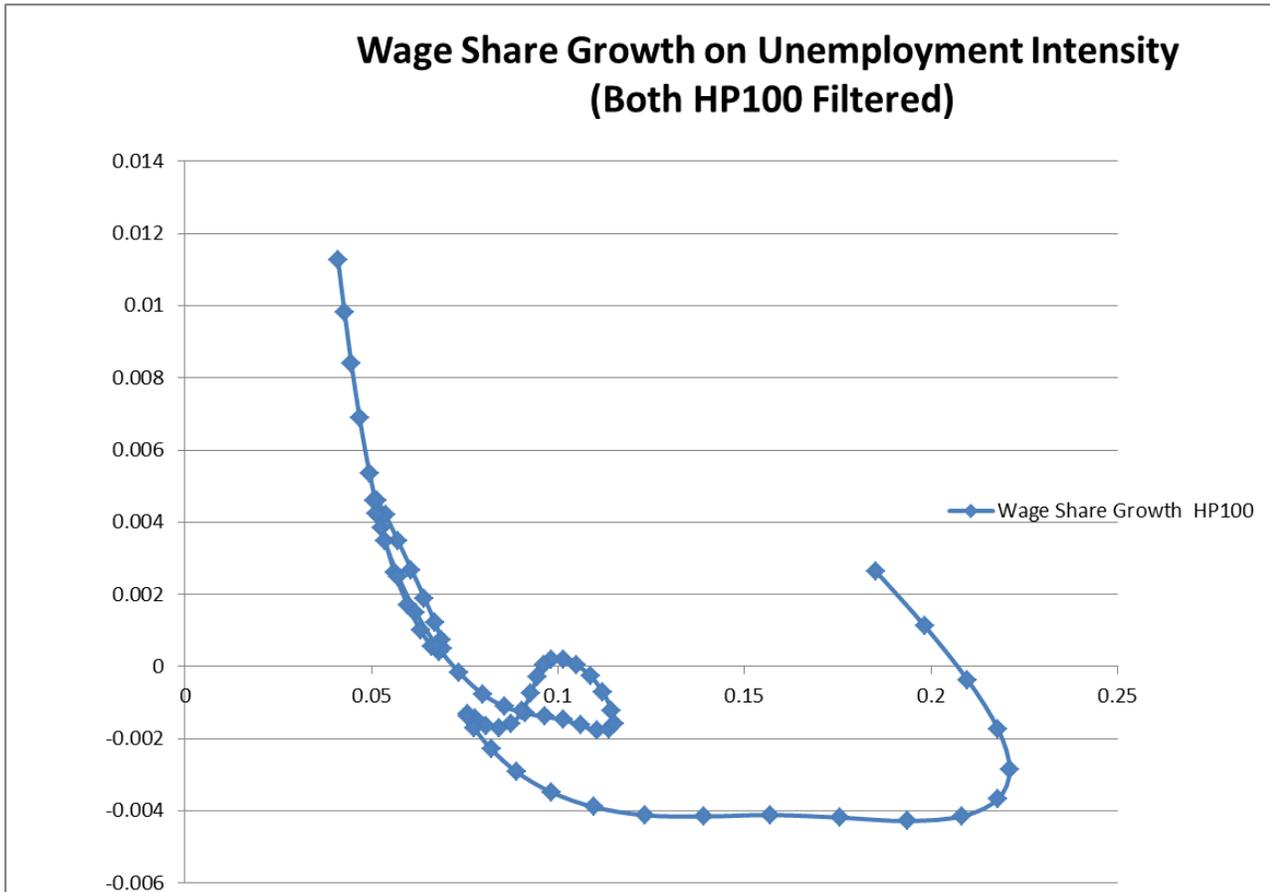
Shaikh's CPC and Classical Goodwin/Marx theory of cycles is similar to frameworks proposed by many other Radical and Post Keynesian economists, though Shaikh makes both productivity and labor force growth dependent on wage share and unemployment intensity growth (Shaikh, 2016, Appendix 14.1). A good example is an approach offered by (Taylor, 2014) and empirically tested by (Keifer and Rada, 2015). More generally, Shaikh's Classical approach assumes that business savings are endogenous and tied to investment and expected profit, and that capacity utilization is not a free variable but driven by investment toward a normal level. These are key differences between Shaikh's Classical approach and standard Post Keynesian, Structuralist, and Sraffian approaches that I believe Shaikh (2016) convincingly demonstrates are important and salient to a more empirically accurate theory of capital accumulation.

2. Extending the Classical Phillips Curve to 2011-2016

Five years have lapsed since the end date 2011 of the estimated CPC above. Is the economy still on the lower 1994-2011CPC in Figure 1 above?

An updated CPC curve that extends Shaikh's analysis to 2016 is shown in Figure 2 below.

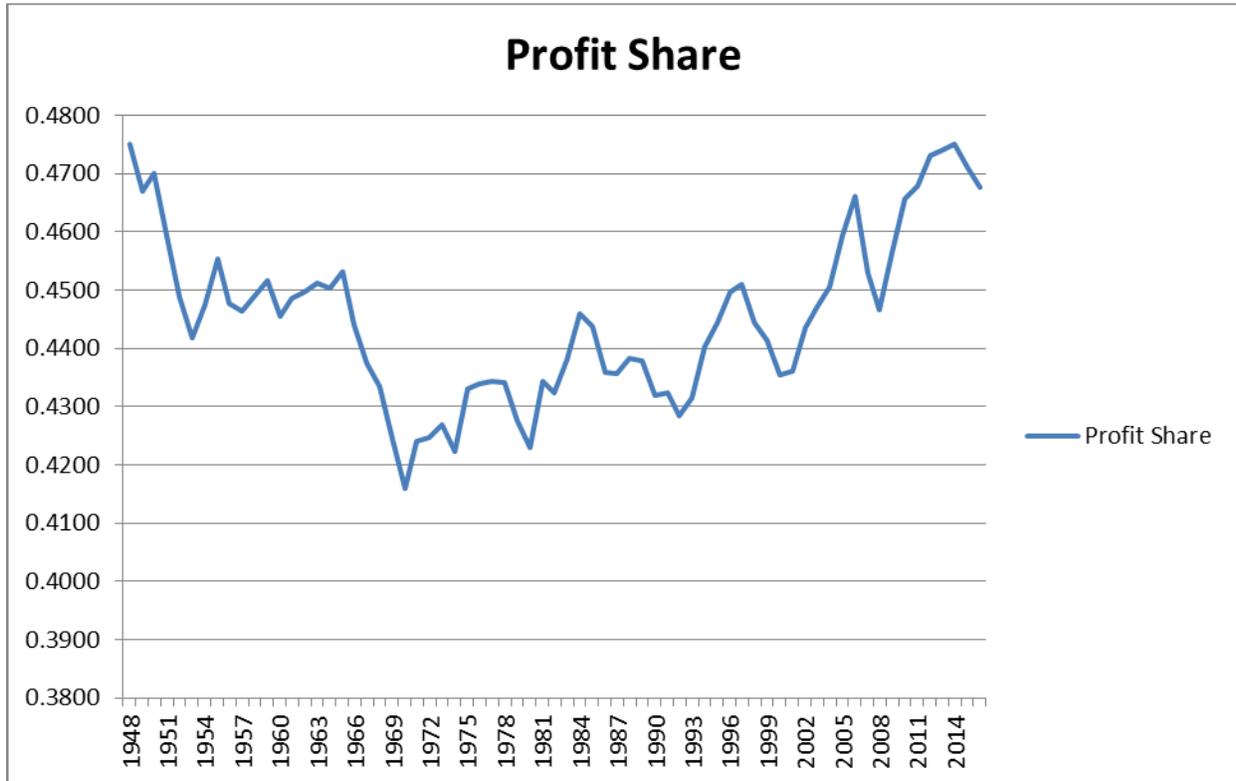**Figure 2: Updated 1949 – 2016 Classical Phillips Curve**

**Wage Share Growth on Unemployment Intensity
(Both HP100 Filtered)**

Legend: Wage Share Growth HP100

Source: Author's calculations from BLS, BEA NIPA Table 1.10, and (Shaikh, 2016) Appendix 14.3 Data Tables in
http://realecon.org/data/   downloaded 10/27/ 2017.

Figure 2 shows that the new data roughly replicates Figure 14.14 (Shaikh, 2016, p. 667) from 1949 to 2011, but after 2011 HP100 data for wage share growth, show a diminishing decline that eventually become positive in 2014, at UI levels that are far higher than they had been before 1995. This suggests that in the post 2011 period the US economy underwent further structural change, as it did in the 1984-1993 period, that led to continued (trend) negative wage share growth from 2012-2014 with (trend) positive wage share growth resuming only in 2015-2016 at much higher rates of unemployment intensity than in the earlier 1949-2011 CPC in Figure 1.

Anwar Shaikh has produced a valuable and comprehensive analysis that is primarily based on data from the relatively functional 20th Century era of U.S. capitalism. His analysis has exposed empirical and theoretical inconsistencies of both Neoclassical and Post Keynesian models that have been ignored by mainstream and radical economists for most of the past century. As a theoretical treatise on the state of modern political economy, I believe that his book is among

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the most important theoretical treatises on political economy of the last half century. However, the very tightness of its analysis exposes the way in which (at least U.S.) capitalism is no longer "normal", but rather has further deteriorated with regard to its ability to provide labor employment and income even at historically high profit share levels, see Figure 3 below.

Figure 3: Profit Share 1948-2016

A comparison of Figures 2 and 3 suggests that rentier income in the U.S. economy became a key factor driving profit share increases after 1999. This is evidenced in Figure 2 by the long period of declining wage share growth that did not lead to a reduction in employment intensity through rising real domestic investment and job growth until after 2010, and then rather than retracing the (downward shifted) Classical Phillips Curve as Shaikh hypotheses in the earlier Figure 1 analysis, finally produces wage share increases only at much higher levels of unemployment intensity. Figure 2 thus suggests that the CPC theorized by Shaikh not only shifted down in the 1984-1993 period, but ceased to function as an underlying *cyclical* structural characteristic of the U.S. economy.

Figure 3 based on unfiltered profit share data further suggests that even the belated uptick in wage share growth depicted in Figure 2 may be an artifact of the filtering process, as the trend

for unfiltered profit share in Figure 3 clearly continues its upward trend through 2016. Rather than movements up and down a CPC curve, the dominant distributional characteristic of the U.S. economy in the post 1984 period supported by Figure 3 appears to be the now widely acknowledged "Great U-Turn" in the U.S. economy toward greater inequality and reduced wage share, that based on Figure 2 accelerated in the post 1999 period (Bluestone and Harrison, 1986).

A key problem with the CPC is the apparent increasing disconnect between the wage share and real production. The increasing profit *share* trend since 1970 shown in Figure 3 provides evidence of an increased flow of income to profit during this period no matter what the level of unemployment, or unemployment intensity, was. This appears consistent with the rentier or unequal exchange based analyses referred to above that posits increased shares of income flow to financial, real, and monopoly property owners over this period *that is relatively independent of employment*. This rentier hypothesis is also consistent with the fact that Shaikh's later (Chapter 15) "growth utilization rate" analysis of inflation, and "net corporate incremental *rate* of profit" (as opposed to the profit *share* based CPC analysis) link to real output growth, neither of which are directly linked to the labor market, both appear to hold up well (Shaikh, 2016, Chap. 15-16).
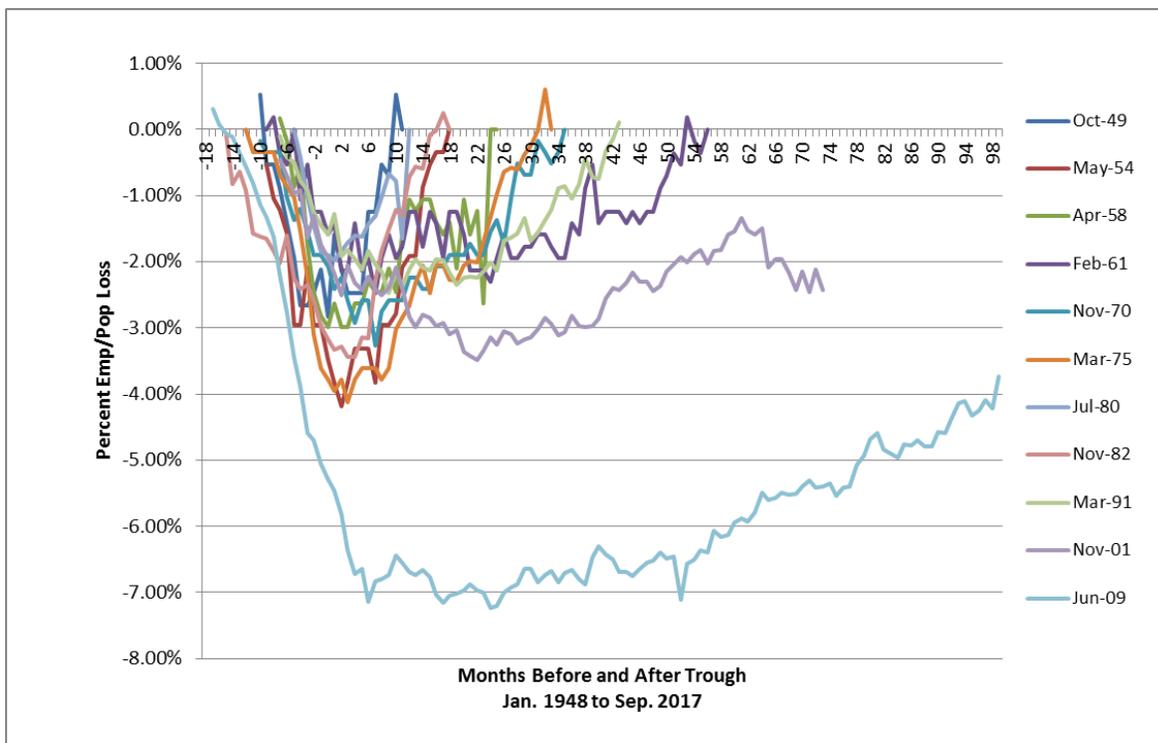
Furthermore, Shaikh's (2016, Chap. 17) data supporting the "Econo-Physics Two Class" theory linking the Gini Coefficient to the ratio of property income to total income (Equation 17.6, p. 755), point to the diminishing importance of wages in production and increasing importance of rent or property income. This analysis shows that the increase in income inequality in the U.S. over this period can be directly related to the increasing share of rent or property income, and declining share of wage income, in the U.S. economy, suggesting that U.S. capitalism has become increasingly dominated by rent, or extraction of income based on ownership rather than production. Shaikh uses 2011 IRS data to replicate results from "Econo-Physics Two Class" theory of income distribution researchers showing that the cumulative probability from above for labor income distribution (bottom 97%-99% of households) is approximately log-linear (Exponential) whereas the cumulative probability from above for property income (top 1%-3%) is approximately log-log (Pareto), or *super unequal* (Shaikh, 2016, Figures 17.2 and 17.3, p. 752-753). Shaikh and Ragab then use this to show that the overall Gini Coefficient measure of inequality is directly correlated with property income share (Shaikh, 2016, Eq. 17.6, p. 755) (Shaikh and Ragab, 2007):

Gini Coefficient = 0.5(1+ prop income/total income)

Further evidence of major structural change in the U.S. economy after 2001 and particularly after the 2008 financial crash or "Lesser Depression" (LD) can be seen in Figure 4 below that shows that employment as a share of population never recovered after the 2001 recession and

is very unlikely to recover after the 2008 LD. In contrast Emp/Pop ratios recovered their immediate pre-recession level in every prior post-war recession within 56 months from the recession trough. In December 2007 when the 2008 LD began, for the first time in post-war history the Emp/Pop ratio had not yet recovered from the prior recession, as the Emp/Pop was 2.42% below its March 2001 level at the start of that (Nov- 01) recession. Similarly, as of September 2017, after 99 months of expansion from the official June 2009 trough of the LD, the Emp/Pop ratio was 3.73% below the December 2007 level. Thus in Sep 2017 the Emp/Pop ratio was more than 6% below its March 2001 level.

Figure 4: Percentage Change in Employment to Population Ratio from Immediate Pre-Recession Level for Post-War Recessions
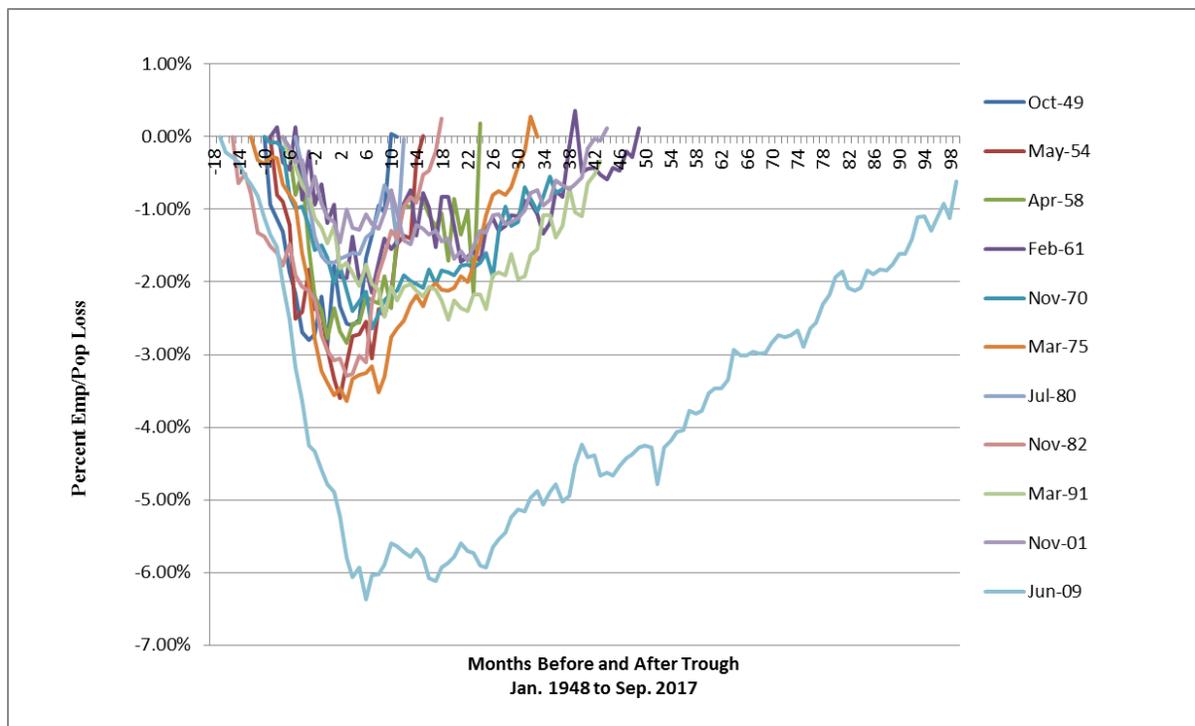

Source: Source: Author's Calculations from BLS CPS Household Survey Data.

Some commentators have argued that Figure 4 does not accurately illustrate the relative health of the labor market because it fails to account for labor force aging that has led to a trend reduction in labor force participation relative to past years (Norris, 2013). However, regardless of the cause, smaller Emp/Pop ratios mean that relatively fewer people are employed, so that in the absence of large increases in wages and benefits, this will cause labor share decline as indicated in Figures 2 and 3 for most of this period. Moreover, in the absence of large transfers of income between the employed and the not employed, a declining Emp/Pop ratio will also increase income inequality and thus reduce demand and employment relative to the level of labor income. Lower Emp/Pop ratios also, of course, means that productivity must rise for

average per-capita output to be maintained, or grow at the same rate, regardless of distribution.

Figure 5 below artificially controls for labor force aging by doing the analysis by population age cohorts (16-24, 25-54, and 55 and over), and holding the shares of the age cohorts constant in the population at September 2017 levels. The Figure shows that by Sep. 2017, even after controlling for demographics, the LD Emp/Pop ratio was still 0.67% below its Dec. 2007 value after 99 months of expansion from its June 2009 trough. The fact that in the CPC of Figure 2 Wage Share growth only became positive in 2015 when the demographically controlled Emp/Pop ratio was within 2-3% of the decline from the start of recession suggests that it took this long for the expansion out of the LD to finally begin to increase labor market upward pressure on the labor share.

Figure 5: Demographically Controlled Percentage Change in Employment to Population Ratio from Immediate Pre-Recession Level for Post-War Recessions

Source: Author's Calculations from BLS CPS Household Survey Data. Population Age Cohorts (16-24, 25-54, 55 and over) fixed at Sep. 2017 Shares.

The direct labor market evidence in Figures 4 and 5 shows that particularly in the last two decades employment growth during U.S. economic expansions has markedly faltered relative to prior post-war expansions. This again suggests that in these expansions rentier, rather than labor, income has significantly increased in the U.S. in recent decades.

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Finally, Figure 6 below shows that the U.S. is an outlier among advanced countries in its decline in Labor Force participation relative to demographically controlled prime age workers after 1997. This is consistent with the employment, income distribution, and macroeconomic evidence cited above and below documenting the reduced wage income and increased inequality from the far reaching rentierest transformation of the U.S. Economy (Shaikh, 2016, Chap. 17) (Balder, 2018).

Figure 6: Labor Force Participation Rate (age 15-54, % of population) 1997Q1 to 2018Q2

Source: Eurostat Employment and Activity by Sex and Age - Quarterly Data lfsi.m.q dataset from (Darvas, 2013, Figure 13, p. 18).

I believe that the evidence of Figures 2-6, along with the Shaikh and Ragab derivations discussed above, indicates that recent extreme increases in inequality are driven by rentier (property) income where property income includes: profits, dividends, interest, rents, and capital gains, or rentier "income from property" in the broad sense. By definition most of this property income is not derived from employment so that this is consistent with the persistent negative wage share growth *and* unemployment intensity increase from 1999 to 2012 in Figure 2. Further macroeconomic data show the explosive growth of FIRE based rentier income from increased debt and asset price appreciation in the post 1980 period, and that U.S. real net investment and wage share steadily trended down even as profits trended up from the 1980s to 2016 (Balder, 2018). This is consistent with the U.S. position as the most rentierist of the advanced capitalist economies partly due to role of the U.S. dollar as the world's reserve currency (Baiman, 2014).

This increasing share of unearned property income is best thought of as a result of unequal exchange (UE), or what Marx called "profit on alienation" and Steuart called "relative profit" rather than profit based on production of surplus value, or "positive profit" (Shaikh, 2016, p. 210). UE is a result of profit on transfer either through monopoly power in production, for example through a dominant platform technology (Faroohar, 2017) , or through the FIRE sector's ability to extract ever larger rents and interest payments by increasing debt loads and prices on existing assets (Hudson, 2012) (Balder, 2018). Rather than a share of the surplus value created through equal exchange and capitalist exploitation of labor in production, UE payments are a result of unequal transfers of value based on dominant market power on labor *and other transactions* including unearned "rent" and capital gains from property based claims on existing assets.

In the following I will focus on UE through a dominant platform technology though I believe that FIRE based rentierism is a larger and more fundamental driver of the modern "Neo-rentierist" UE based U.S. economy and of the deep structural changes in the U.S. economy (Baiman, 2014, Figures 1-3). I focus on platform technology as I believe that it is amenable to UE analysis using a fairly straightforward application of the "New Interpretation" based Ricci method described below. It may be possible to extend a version of this type of analysis to at least partially measure FIRE based UE from rent extraction through lending and asset value appreciation but this is beyond the scope of this paper (Hudson, 2012) (Keen, 2017).[1]

To be clear, I believe that the employment, distribution, and macroeconomic data and analysis described and cited above show that increased income from, especially FIRE based rentierist, UE is a critically important factor causing the structural changes in the U.S. economy starting in the early 1980's exhibited in Figures 2-6. The UE analysis in Sections 3-5 below is an effort to provide additional industry and firm level evidence for increasing UE in the US in the more recent post-2000 period from the growth of platform monopolies by measuring UE in an important growing sector, "Advertising and Market Research" (A&MR), and for a single dominant platform company, Facebook (FB) in that sector. The estimates derived for the magnitude of UE in the U.S. A&MR sector and for FB are an example of rentierism through monopolistic platform UE in the modern U.S. economy that is consistent with the abundant more general evidence above indicating that this has happened in the overall economy. The UE estimates for one sector and one company developed in Sections 3-5 below, in themselves, are not proof of a rentierist trend in the U.S. economy.

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[1] A key problem with using standard IO accounting to evaluate UE in the FIRE sector is that unrealized capital gains are not included as income in standard NIPA accounts (Hudson, 2012, 2015).

3. Ricci's Unequal Exchange Theory

Though the most important unequal exchange rentier sector is FIRE (Finance, Insurance, and Real Estate), monopolistic UE is also becoming increasingly prevalent in the tech sector through dominant platform companies like Facebook. In the following, in an effort to test the hypothesis above that since 2011 rentier unequal exchange extraction of income from the economy has become increasingly important, I extend a methodology for estimating UE in international trade recently developed by Ricci (2018), to estimate the importance of UE in the monopolistic U.S. high technology sector with a particular focus on Facebook.

Ricci proposes a formal framework that he believes covers all of the major strands of Unequal Exchange in international trade proposed in the literature, and a methodology, using WIOD "Socio Economic Accounts" and "Supply and Use Table" data, to estimate UE levels. As I cannot do justice to Ricci's work in this paper and want to encourage readers to read his paper, in the following I will provide just a minimal outline of his methodology to describe how my US A&MR UE estimates have been derived, and to explain my modification of Ricci's methodology to the analysis of Facebook's absolute-rent from UE.

Ricci points out that since by definition as unequal exchange is a disequilibrium phenomenon it cannot be measured by methods, such as that of classical political economy, that track the central tendencies of long-run equilibrium (or even "turbulent regulation" as in Shaikh's analysis). Ricci therefore proposes to apply Marxist "New Interpretation" (NI) methodology as the NI method is not based on long-term tendencies but on current (and ever fluctuating) economic valuations (Dumenil, 1980) (Foley, 1982). Ricci further proposes to apply the NI method at a disaggregated level by applying a distinction that he attributes to Rubin (1973) between "value in production" and "value in circulation" of human labor power. Following the NI method he proposes to measure value in production of the amount of "homogenous labor" required for a specific country to produce the value added share of the global output of that industry. Where this share is measured in dollar purchasing power parity ($ PPP) of overall industry production value-added normalized so that total industry value added $ PPP equals total industry value-added in dollars.

Ricci is thus assuming that national industry homogenous labor hours are a $ PPP based share of total industry labor hours, as these shares reflect the real relative values of the product of labor in local economies. Homogenous labor hours will thus be greater than actual labor hours in countries with higher $ PPP where domestic purchasing power in dollars of output is greater than the global exchange value of the same output at official exchange rates, and homogenous labor hours will be less than actual labor hours in countries with lower $ PPP where domestic purchasing power in dollars of output is less than the global exchange value of the same output at official exchange rates. This method thus uniformly measures the value of labor in

production in each country and industry as the $PPP value of the output of that labor regardless of official dollar exchange value of this labor in global circulation.

Ricci's method is based on the following eight equations (Ricci, 2018, eq. 1-7):

(1) $L_w^h \equiv \sum_j L_{wj}^h \equiv \sum_j L_{wj} \equiv L_w$

where: L_w^h is world homogenous labor, L_{wj}^h is world homogenous labor for industry j, L_{wj} is world total labor in industry j, and L_w is total world (direct living) labor:

(2) $MEV = \frac{Y_w^\$}{L_w}$

where: $Y_w^\$$ is total world value-added or GDP and the MEV is the NI "Monetary Expression of (labor) Value".

Ricci next defines homogenous labor in industry j for country i as:

(3) $L_{ij}^h = \left(\frac{e_{ij}^p Y_{ij}^{nc}}{Y_{wj}^\$} \right) L_{wj}$

where: L_{ij}^h is homogenous labor for country i and industry j; $e_{ij}^p = e_i^p \frac{\sum_i \left(e_i^\$ Y_{ij} \right)}{\sum_i \left(e_i^p Y_{ij} \right)}$ is the normalized country and industry $ PPP exchange rate, where $e_i^\$$ is the official dollar to national currency exchange rate for country I, and e_i^p is the $ PPP exchange rate for country i; Y_{ij}^{nc} is the country and industry value-added in national currency; and $Y_{wj}^\$$ is world industry value-added in dollars.

Market (labor) Value (MV_{ij}) in dollars per unit output for country i and industry j is then:

(4) $MV_{ij} = \left(MEV + \frac{e_i^\$ C_{ij}^{nc}}{L_{ij}^h} \right) \left(\frac{L_{ij}^h}{Q_{ij}} \right)$

where: C_{ij}^{nc} is constant capital in national currency used in production by industry j in country i, and Q_{ij} is total output of industry j in country i.

But international Market Price (MP_{ij}) per unit of output for industry j in country i is:

(5) $MP_{ij} = \left(\frac{e_i^\$ Y_{ij}^{nc} + e_i^\$ C_{ij}^{nc}}{L_{ij}^h} \right) \left(\frac{L_{ij}^h}{Q_{ij}} \right)$

so that UE transfer of value from exports (X_{ij}), is:

(6) $MP_{ij} - MV_{ij} = \left(\dfrac{e_i^{\$} Y_{ij}^{nc}}{L_{ij}^h} - MEV \right) \left(\dfrac{X_{ij}}{Q_{ij}} \right) L_{ij}^h = t_{ij}$

By substituting in (2), (6) can be split into a "differential-rent" inter-industry transfer t_{ij}^B, and an "absolute-rent" intra-industry transfer t_{ij}^W, as follows:

(7) $t_{ij} = \left(t_{ij}^B + t_{ij}^W \right) \left(\dfrac{X_{ij}}{Q_{ij}} \right) L_{ij}^h$

where:

$$t_{ij}^B = \dfrac{Y_{wj}^{\$}}{L_{wj}} - MEV$$

$$t_{ij}^W = \left(ERDI_{ij} - 1 \right) \left(\dfrac{Y_{wj}^{\$}}{L_{wj}} \right)$$

where: $ERDI_{ij} = \dfrac{e_i^{\$}}{e_{ij}^p}$ is the "Exchange Rate Discrepancy Index" for country i and product j.

At this point in his analysis Ricci claims (footnote 12) that the t_{ij}^B and t_{ij}^W components in (7), when applied to countries, are analogous to "unequal exchange" and "rentier" countries in Baiman (2014), that uses a simple analytical Marxist example to characterize these two types of UE. I agree with this general analogy and believe that Ricci offers a path-breaking method for estimating UE transfers, net of productivity differences - controlled in Ricci's model by using industry standardized homogenous labor coefficients for all countries. However, I don't think that Ricci's method can adequately differentiate between differential-rents from different industrial specializations, and absolute-rents from different levels of labor and capital remuneration (that Ricci analyzes in a later part of his paper). I believe that the application of a slightly modified Ricci method to FB demonstrates this, see Section 4 below.

Finally, applying (7) to calculate net UE transfer gives (Ricci, 2018, Equation 11):

(11) $T_{ij} = \left(t_{ij}^B + t_{ij}^W \right) \left(\dfrac{X_{ij}}{Q_{ij}} \right) L_{ij}^h - \sum_{n \neq i} \left(t_{nj}^B + t_{nj}^W \right) \left(\dfrac{M_{inj}}{Q_{nj}} \right) L_{nj}^h$

Where: T_{ij} is dollar value of total sector j UE transfer to country i, X_{ij} dollar value of exports from country i's sector j, Q_{ij} is dollar value of gross output of sector j in country i, and M_{inj} is dollar value of sector j imports to country i from country n.

4. Applying the Ricci Method to the US A&MR Sector

In addition to working out a theoretical UE model (Ricci, 2018) uses WIOD data to estimate UE values for a large number of countries and regions, for select years from 1995 to 2009. As I am interested in the post 2011 period for the US, and particularly in sectors that have undergone rapid transformation in this period, I will apply Ricci's method to one industry, "Advertising and Market Research" (A&MR), Sector 73, and one country (USA), using (the 43 country and ROW, and 56 industry) 2014, WIOD SEA and SUT data. Though I am estimating these effects for one industry and one country, due to the interdependent nature of these estimations, as will be shown below these calculations take into account UE effects for USA Sector 73 from each of the other 42 countries and industries in the 2014 WIOD SEA and SUT.

Following equations (1)-(3) and (7), using these data as shown in Figure 6 below, I find that:

(1) Total world hours worked by employees in all industries in 2014 was 3,814,547 M.

(2) Total world value-added of all industries in current dollars at official exchange rates in 2014 was $ 63,118,449 M so the world Monetary Expression of Value (MEV) for an hour of labor in 2014 based on Equation (2) was $16.55.

(3) Figure 7 below shows A&MR homogenous labor hour estimates for all of countries and for Facebook based on Equation (3) where Facebook's homogenous labor is based on its value added as a share of 2014 A&MR $ 3,914 M world value-added.[2]

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[2] Facebook's number of employees in 2014 was 9,199 (Facebook, 2014, p. 7). Assuming these employees worked 2,080 hours a year gives 19.13 million hours a year. Facebook's income from operations in 2014 was $ 4,994 M (p. 30). Almost all of Facebook's 2014 revenue was from advertising (p. 43). All other data is from 2014 WIOD SEA. 2014 $ PPP data by country is from World Bank "World Development Indicators" downloaded 1/25/2018, except for Taiwan which is from IMF Economic Outlook October 2017 downloaded 2/9/2018.

**Figure 7: 2014 Homogeneous Labor Hour Estimates for the A&MR
Sector for all Countries and for Facebook (millions)**

Country	Value Added in $ PPP (Y$ppp_ij)	Value Added in $ at Official Exchange Rates (Y$_ij)	Actual Employee Hours of Labor (L_ij)	Calculated Homogeneous Employee Hours of Labor (Lh_ij)
AUS	0	0	0	0
AUT	1,622	1,714	34	26
BEL	1,843	1,955	21	29
BGR	482	218	18	8
BRA	0	0	0	0
CAN	3,585	4,013	113	56
CHE	0	0	0	0
CHN	0	0		0
CYP	70	63	2	1
CZE	1,556	951	35	24
DEU	17,604	17,944	245	277
DNK	731	957	16	12
ESP	5,944	5,234	150	93
EST	229	160	6	4
FIN	659	793	15	10
FRA	11,174	11,950	215	176
GBR	15,143	17,285	320	238
GRC	606	498	25	10
HRV	362	222	8	6
HUN	872	484	15	14
IDN	0	0	0	0
IND	0	0	0	0
IRL	442	480	9	7
ITA	4,686	4,576	80	74
JPN	12,780	12,394	223	201
KOR	1,656	1,371	81	26
LTU	545	321	10	9
LUX	117	137	2	2
LVA	329	217	9	5
MEX	0	0	0	0
MLT	137	106	2	2
NLD	4,113	4,383	61	65
NOR	546	810	9	9
POL	10,318	5,768	93	162
PRT	825	633	22	13
ROU	2,124	1,025	41	33
RUS	0	0	0	0
SVK	807	518	24	13
SVN	209	162	4	3
SWE	2,161	2,764	37	34
TUR	0	0	0	0
TWN	3,332	1,632	46	52
USA	141,276	141,276	1,924	2,221
ROW	0	0	0	0
Total	248,886	243,012	3,914	3,914
Facebook	4,994	4,994	19	79

Source: Author's calculations from WIOD 2014 SEA and Exchange Rate data, Facebook 2014 Annual Report, and World Bank "World Development Indicators" 1/2018 and IMF "Economic Outlook" 10/2017 $ PPP exchange rate estimates.

(7) Using 2014 WIOD SEA data and equation (7) the Ricci UE coefficients for the USA A&MR sectorcan be calculated as shown in Figure 8 below (for notation see Equations (1) – (7) above).

Figure 8: Ricci Method 2014 World A&MR Sector UE Coefficients

j=A&MR			
w=world			
B=between			
Y$_w=		$ 63,118,449	M
L_w=		3,814,547	M hours
MEV=		$ 16.55	per hour
Lwj=		3,914	M hours
Y$_wj=		$ 243,012	M
Y$_wj/Lwj=		$ 62.09	per hour
tB_wj=		$ 45.55	per hour
Y$PPP_wj=		$ 248,886	M
Y$_wj/Y$PPP_wj= $\dfrac{\Sigma_i\left(e_i^{\$}Y_{ij}\right)}{\Sigma_i\left(e_i^{p}Y_{ij}\right)}=$		0.98	

Based on the 2014 WIOD SUT 2014 gross output of world A&MR sector is $242,036 M (cell CNL2478), and that of this the US domestic supply of the 2014 US A&MR Sector is $93,553 M (sum of cells CNL2359 to CNL2414), so that the $148,482 M remainder of this output is exported resulting in a 2014 US A&MR sector export share, $\left(\dfrac{X_{ij}}{Q_{ij}}\right)$ in equation (7), of 61.3%.

Applying this total USA homogenous A&MR hours from Figure 6 of 2,221 M, and t_{ij}^{B} = $45.55 hour from in Figure 5 to the first term in equation (7), we get a t_{ij}^{B} "Between" UE inflow of $62,073 M to the 2014 U.S. A&MR sector. Similarly, since e_i^{p} =1 when i=USA, as the $ PPP

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[3] Total world labor hours from WIOD 2014 SEA table are 2,025,754 M but this figure does not include any labor hours from China. China official statistics indicate 772.53 M employed persons in 2014 and average hours of work per year, from Chinese Government 2015 annual report, of 2,315.5 (China Labour Statistical Yearbook, 2016). The product of these gives an estimate of 1,788,793 M total 2014 China labor hours. Adding this figure to total WIOD 2014 labor hours without China of 2,025,754 M gives the estimate for total 2014 world labor hours of 3,814,547 used in Figure 8.

exchange rate for U.S. dollars is one, and from Figure 7, $\frac{\Sigma_i\left(e_i^{\$}Y_{ij}\right)}{\Sigma_i\left(e_i^{p}Y_{ij}\right)}$ = 0.98, per the explanation of

equation (3) above, e_{ij}^{p} = 0.98, where i=USA and j=A&MR, so that, since $ERDI_{ij}$ = $\frac{e_i^{\$}}{e_{ij}^{p}}$ per the

explanation of equation (7) above, $ERDI_{ij}$ =1/0.98=1.02 when i=USA and j=A&MR, and

Y\$_wj/Lwj= \$62.09 from Figure 5, we get t_{ij}^{W} =\$1.50 per hour. Applying this to the 2014 US

A&MR sector export share, $\left(\frac{X_{ij}}{Q_{ij}}\right)$ of 61.3% and USA homogenous A&MR hours of 2,221 M, from

the second term in equation (7), we get "Within" UE inflow of \$ 2,046 M. We therefore get a

total UE inflow for the U.S. A&MR sector of \$ 64,119 M as shown in Figure 9 below.

Figure 9: Ricci Method Calculations for 2014 U.S. UE Inflow from U.S. A&MR Exports

	MA&R Exports From USA ($ Millions)	Total USA Output MA&R ($ Millions)	Lh_ij (Millions of hours)	tB_ij (Per hour)	eP_ij	Y$_wj/Lwj (Per hour)	ERDIij	tW_ij (Per hour)	Between ($ Millions)	Within ($ Millions)	Total ($ Millions)
USA	$148,482.48	$ 242,035.80	2221.48	$ 45.55	0.98	$ 62.09	1.02	$ 1.50	$62,073.47	$ 2,045.59	$64,119.06

Sources: Author's calculations from WIOD 2014 SEA and Exchange Rate data, and World Bank "World Development Indicators" 1/2018 and IMF "Economic Outlook" 10/2017 $ PPP exchange rate estimates plus adjustment for missing China labor hours in WIOD 2014 data.

(10) A similar calculation for all of the 42 countries and ROW that export A&MR services to the US, that is all of the positive values in the A&MR columns (M73) of these countries in the USA A&MR row (2406). Figure 10 below uses the shares of the respective A&MR gross output of each of these countries that is exported to the U.S.,   the $ PPP and $ official exchange VA of this sector for each of the countries, and the A&MR homogenous labor amounts for these countries from Figure 7, to calculate the second term in equation (10).[4]

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[4] Note that in 2014 China did not receive A&MR services from the U.S. or export these services to the U.S. so that the adjustments to China 2014 WIOD data necessary for calculating the first term in equation (10) above are not applicable to this calculation of the second term in equation (10).

Figure 10: Ricci Method Calculations for 2014 U.S. UE Outflow from A&MR Imports
(For all countries with positive 2014 A&MR Exports to U.S.)

	MA&R Exports to USA ($ Millions)	Total Output MA&R ($ Millions)	Lh_ij (Millions of hours)	tB_ij (Per hour)	eP_ij	Y$_wj/Lwj (Per hour)	ERDIij	tW_ij (Per hour)	Between ($ Millions)	Within ($ Millions)	Total ($ Millions)
AUT	$ 25.41	$ 6,087.32	25.50	$ 45.55	1.23	$ 62.09	1.08	$ 5.13	$ 4.85	$ 0.55	$ 5.39
BEL	$ 150.27	$ 7,767.49	28.99	$ 45.55	1.22	$ 62.09	1.09	$ 5.35	$ 25.54	$ 3.00	$ 28.54
BGR	$ 3.49	$ 830.05	7.59	$ 45.55	1.47	$ 62.09	0.46	$ (33.36)	$ 1.45	$ (1.06)	$ 0.39
CAN	$ 215.10	$ 40,749.96	56.38	$ 45.55	0.79	$ 62.09	1.15	$ 9.08	$ 13.55	$ 2.70	$ 16.26
CYP	$ 0.78	$ 216.96	1.10	$ 45.55	1.44	$ 62.09	0.92	$ (4.98)	$ 0.18	$ (0.02)	$ 0.16
CZE	$ 13.59	$ 3,772.61	24.46	$ 45.55	0.08	$ 62.09	0.63	$ (23.22)	$ 4.01	$ (2.05)	$ 1.97
DEU	$ 9.04	$ 31,712.99	276.82	$ 45.55	1.27	$ 62.09	1.04	$ 2.73	$ 3.59	$ 0.22	$ 3.81
DNK	$ 2.61	$ 3,200.70	11.50	$ 45.55	0.13	$ 62.09	1.34	$ 21.08	$ 0.43	$ 0.20	$ 0.62
ESP	$ 1.02	$ 11,943.25	93.46	$ 45.55	1.47	$ 62.09	0.90	$ (6.09)	$ 0.36	$ (0.05)	$ 0.32
EST	$ 0.13	$ 475.25	3.60	$ 45.55	1.85	$ 62.09	0.72	$ (17.61)	$ 0.05	$ (0.02)	$ 0.03
FIN	$ 7.10	$ 1,647.34	10.36	$ 45.55	1.08	$ 62.09	1.23	$ 14.48	$ 2.03	$ 0.65	$ 2.68
FRA	$ 125.36	$ 24,853.13	175.71	$ 45.55	1.21	$ 62.09	1.10	$ 5.91	$ 40.37	$ 5.24	$ 45.61
GBR	$ 8.81	$ 31,240.91	238.11	$ 45.55	1.41	$ 62.09	1.17	$ 10.50	$ 3.06	$ 0.71	$ 3.76
GRC	$ 0.10	$ 1,410.07	9.53	$ 45.55	1.58	$ 62.09	0.84	$ (9.88)	$ 0.03	$ (0.01)	$ 0.02
HRV	$ 0.26	$ 732.13	5.69	$ 45.55	0.28	$ 62.09	0.63	$ (23.06)	$ 0.09	$ (0.05)	$ 0.05
HUN	$ 1.07	$ 928.29	13.71	$ 45.55	0.01	$ 62.09	0.57	$ (26.81)	$ 0.72	$ (0.42)	$ 0.30
IRL	$ 0.59	$ 583.48	6.96	$ 45.55	1.20	$ 62.09	1.11	$ 6.85	$ 0.32	$ 0.05	$ 0.37
ITA	$ 5.77	$ 20,128.37	73.68	$ 45.55	1.33	$ 62.09	1.00	$ 0.01	$ 0.96	$ 0.00	$ 0.96
JPN	$ 1.01	$ 69,872.47	200.96	$ 45.55	0.01	$ 62.09	0.99	$ (0.42)	$ 0.13	$ (0.00)	$ 0.13
KOR	$ 0.10	$ 2,312.52	26.05	$ 45.55	0.00	$ 62.09	0.85	$ (9.47)	$ 0.05	$ (0.01)	$ 0.04
LTU	$ 0.33	$ 544.09	8.57	$ 45.55	2.21	$ 62.09	0.60	$ (24.64)	$ 0.23	$ (0.13)	$ 0.11
LUX	$ 0.84	$ 793.48	1.83	$ 45.55	1.11	$ 62.09	1.20	$ 12.43	$ 0.09	$ 0.02	$ 0.11
LVA	$ 1.79	$ 724.21	5.18	$ 45.55	1.97	$ 62.09	0.67	$ (20.21)	$ 0.58	$ (0.26)	$ 0.32
MLT	$ 7.56	$ 498.08	2.16	$ 45.55	1.68	$ 62.09	0.79	$ (12.85)	$ 1.49	$ (0.42)	$ 1.07
NLD	$ 60.17	$ 10,649.26	64.67	$ 45.55	1.22	$ 62.09	1.09	$ 5.67	$ 16.64	$ 2.07	$ 18.72
NOR	$ 5.06	$ 3,568.13	8.59	$ 45.55	0.10	$ 62.09	1.52	$ 32.19	$ 0.56	$ 0.39	$ 0.95
POL	$ 20.18	$ 11,816.30	162.25	$ 45.55	0.55	$ 62.09	0.57	$ (26.55)	$ 12.62	$ (7.36)	$ 5.27
PRT	$ 1.25	$ 2,084.49	12.97	$ 45.55	1.69	$ 62.09	0.79	$ (13.29)	$ 0.36	$ (0.10)	$ 0.25
ROU	$ 0.61	$ 2,704.16	33.40	$ 45.55	0.61	$ 62.09	0.49	$ (31.41)	$ 0.35	$ (0.24)	$ 0.11
SVK	$ 1.00	$ 1,379.78	12.69	$ 45.55	2.02	$ 62.09	0.66	$ (21.29)	$ 0.42	$ (0.20)	$ 0.22
SVN	$ 0.95	$ 572.45	3.29	$ 45.55	1.67	$ 62.09	0.79	$ (12.74)	$ 0.25	$ (0.07)	$ 0.18
SWE	$ 72.30	$ 8,251.32	33.98	$ 45.55	0.11	$ 62.09	1.31	$ 19.26	$ 13.56	$ 5.73	$ 19.29
TWN	$ 0.01	$ 4,207.74	52.39	$ 45.55	0.07	$ 62.09	0.50	$ (30.93)	$ 0.01	$ (0.00)	$ 0.00
Total									$ 148.94	$ 9.06	$ 158.00

Sources: Author's calculations from WIOD 2014 SEA and Exchange Rate data, and World Bank "World Development Indicators" 1/2018 and IMF "Economic Outlook" 10/2017 $ PPP exchange rate estimates plus adjustment for missing China labor hours in WIOD 2014 data.

Note that the calculations in (7) and (10) above, based on Eq. (7) and Eq. (10) respectively, take into account all of the A&MR UE export effects from the USA to other countries and similarly all of the A&MR UE import effects from other countries to the USA, for all of the countries in the world that imported or exported A&MR services from or to the USA in 2014. From this we find $149 M "Between" and $ 9 M "Within" for a total A&MR UE transfer out of the US of $ 158 M in 2014. These final results are shown in Figure 11 below.

Figure 11: Ricci Method 2014 U.S. A&MR Sector UE Transfers (millions)

Between UE inflow =	$	62,073
Within UE inflow=	$	2,046
Total UE inflow=	$	64,119
Between UE outflow =	$	149
Within UE outflow=	$	9
Total UE outflow=	$	158
Between Net =	$	61,925
Within Net=	$	2,037
Total Net=	$	63,961

Source: Author's calculations from WIOD 2014 SEA, SUT, and Exchange Rate data, and World Bank "World Development Indicators" 1/2018 and IMF "Economic Outlook" 10/2017 $ PPP exchange rate estimates.

Total Net 2014 US A&MR UE is thus $64.0 B, or almost a half (45.3%), of total US A&MR Value added ($141.3 B) in 2014 (see Figure 6).

5. Modifying the Ricci Method to Measure Facebook's Absolute-Rent Share of U.S. UE

Ricci's method is based on UE from industries with higher than average $ value-added per unit of industry average homogeneous labor, allocated based on the $ PPP valued average labor productivity across each industry. Countries with disproportionate net (export – import) output shares from these industries are able to trade commodities with less homogenous labor value for commodities with more homogenous labor due to: "differential-rent" from inter-sectoral, wage and profit, and capital composition differences, relative to countries that have fewer of these sectors. In addition countries with undervalued official dollar exchange rates relative to their $ PPP exchange rates (normalized across all industries so that world $ value added equals world $ PPP value added) are able to extract "absolute-rent" relative to countries without these ERDI discrepancies, that Ricci assumes are based on within-industry between-country disparities in dollar valued wages and profits.

However, though Ricci's overall method is a path-breaking analytical advance over prior UE analysis (including that in (Baiman, 2014)) that I think successfully provides an estimate of total net UE transfer, I don't think it successfully differentiates between UE from absolute and differential rent. Based on Figure 7, Facebook for example produced $4,994 M in dollar value-added for the US A&MR sector from 19 M actual direct labor hours in 2014. Assuming Facebook A&MR workers had skills and abilities that were roughly comparable to other US A&MR workers these 19 M direct labor hours would have been equal to (2,221/1,924)*19 = 22

M US A&MR homogenous labor hours, where (2,221/1,924) is the US A&MR homogenous/actual labor hours ratio. Again, based on Figure 6, if Facebook were a country whose only output was A&MR it would employ 79 M A&MR homogenous labor hours. But, as it is safe to assume that at least in 2014 almost all of Facebook's employees worked in the US, there is no reason to believe that FB workers were 79/22=3.5 times more skilled or competent than average US A&MR workers. Thus, based on the data in Figures 4 and 5, Facebook enjoyed a within-industry, within-country, between-firm absolute-rent, of:

(11) $(79-22) \times (MEV + tB\_ij + tW\_ij) = \$3,777$ M

Of this:

(12) $(79-22) \times (tB\_ij + tW\_ij) = \$ 2,794$ M contributed to net US UE in international trade.

As this raised the industry value-added/homogenous-labor average, it represents a significant share of what Ricci labels UE from "differential-rent". I believe that this example shows that Ricci's identification of absolute-rent with ERDI discrepancy is too narrow and that a portion of what he identifies as "differential rent" is actually "absolute-rent".

To be clear an alternative interpretation of FB's 79 to 22 homogeneous labor hour advantage might consider the returns derived in equations (11) and (12) above to be a result of product differentiation and improvement relative to other producers in the industry and country. Some portion of this "absolute rent" might therefore be considered a return to entrepreneurship or product differentiation rather than "rent". Alternatively, some of this might be considered rent that FB is extracting from the consumer data that it is harvesting and selling often in violation of generally accepted democratic privacy rights as Facebook does not generate this rent simply from cost cutting. Facebook and Google were expected to account for 84% of the world's (excluding China) on-line advertising (Garrahan, 2017). The revenue that Facebook and Google collect for their advertising and market research services vastly exceeds the actual cost of providing these services as a key part of the value of their products are their very large embedded historical market shares (Faroohar, 2017). Also, this is not just an economic rent problem. It is becoming increasingly obvious that the enormous power and potential usefulness of the data that Facebook collects should not be collected, administered, and used by a single for profit private company (Faroohar, 2017) (Thornhill, 2018) (Galloway, 2018).

However, as these questions of the proper socially efficient return to entrepreneurship or product improvement, and the appropriate level of commercialization of private data and profit from it, are beyond the scope of this paper, I am for analytical clarity labeling the entirety of the "above normal" value-added per unit of homogeneous labor received by FB as "within-country, between-firm, absolute rent".

6. Conclusion: Shaikh's Classical-Keynesian Political Economy Needs to be Supplemented with UE, or "Rentier Economy" Analysis, Particularly for the US Economy in the Post 2000 Period

Extending (Shaikh, 2016, Chap. 14)'s 1949-2011 "Classical Phillips Curve" (CPC) analysis to 2016 confirms the deep structural change in the U.S. economy during the 1970-1980's revealed by Shaikh's 1949-2011 data, but does not follow the pattern anticipated by Shaikh for the years 2012-2016. This paper hypothesizes that this is a result of an increasingly "rentier" economy that deviates from patterns identified through Shaikh's classical political economic particularly with regard to surplus extraction through unequal exchange (UE).

I believe that the labor market, income distribution, and macroeconomic data and analysis presented in Sections 1-2 of this paper provide compelling evidence that increased income from, especially FIRE based rentierist, UE was a critically important factor behind the structural changes in the U.S. economy starting in the early 1980's exhibited in Figures 2-6. The UE analysis in Sections 3-5 above is an effort to provide additional *microeconomic* evidence for increasing UE in the US in the more recent post-2000 period from the growth of platform monopolies by measuring UE in an important growing sector, "Advertising and Market Research" (A&MR), and for a single dominant platform company, Facebook (FB) in that sector. These microeconomic UE estimates for one sector and one company are not, in themselves, proof of a rentierist trend in the U.S. economy, but they are additional evidence in support of this hypothesis.

This analysis of the important and fast growing "Advertising and Market Research" (A&MR) sector of the U.S. economy, using Ricci's (2018) methodology, provides an estimate that UE accounts for $64.0 B, or almost a half (45.3%), of total US A&MR Value added ($141.3 B) in 2014. A modification of Ricci's methodology for firm level UE estimation finds that in 2014 Facebook alone was able to extract a within-industry, within-country, and between-firm absolute rent of $ 3,777 M. Based on this analysis, even with the caveats discussed in Section 5 regarding the possibility that a portion of these "rents" may be socially useful returns to entrepreneurship or product improvement rather than exclusively UE or rent, I conclude that UE has come to play a key role in an important developing sector of the US and world economy.

Based on this analysis and the evidence presented in Sections 1-2 of this paper, I conclude that, particularly for the post 1999 period, Shaikh's analysis needs to be extended with non-classical political economy UE, or "rentier economy", analysis. Though not addressed in this paper, the increasing importance and rent extraction in the global Finance, Insurance, and Real Estate (FIRE) sector is probably an even more important factor leading to rentier structural change in late capitalism (Hudson, 2015, 2012) (Baiman, 2014).

More generally, I believe that the modified Ricci methodology used in this paper is a potentially valuable contribution even though relative returns to entrepreneurship or product quality or monopoly power, and levels of differential and absolute rent, may not always be amendable to precise estimation due to the qualitative nature of the former, and possible overlap and feedback effects between the later. Nonetheless, the ability to estimate overall potential UE in this way provides a practical method to base economic accounting on the productive and exchange value of human labor, which is where it should be based (Baiman, 2016). It also opens the possibility of a deeper layer of analysis of the relationship between productive homogenous labor and actual labor. All radical economists, including: Marxists, Classical Keynesians, and Left Post Keynesians and MMTers, who believe that human labor is the ultimate source of economic value, should, I think, find this methodology to be potentially of great value.

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