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The Financial Rentier in the 21st century

Nicolini LLosa Jose Luis
Garcia Alfredo Daniel
Guerra Ezequiel

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Alfredo D. Garcia, Ezequiel Guerra and Jose L. Nicolini-LLosa

The purpose in this work is to measure rentiers wealth in the world economy in 1986-2015. The non-rentiers are wage earners, capitalists and governments. We focus on the following question, hitherto unexplored in the literature. While accumulating financial wealth, the rentiers are the only agents who both inevitably generate indebtedness for those involved in production and potentially contribute to financial instability. This seems relevant given the trend rise in rentiers financial wealth. We find that rentiers financial wealth relative to world GDP increased from an average of 101% in 1986-1992 to an average of 188% in 2000-2015.

To measure rentiers wealth, we propose a new and simple methodology based on the following definition. Based on the Keynesian-Kaleckian tradition, in this paper rentiers are defined as firms, institutions or individuals, who derive their income only from property rights. Rentiers do not employ labour. Rentiers' financial assets may indirectly finance production through the financial system that we do not discuss. The non-rentiers either spend their income or save it to eventually spend it. The rentiers hoard their savings accumulating wealth.

If a consolidated world balance sheet was made, rentiers would be the only final accumulators of financial assets. The non-rentiers group would be the net debtor in the aggregate. The resources to pay the rent to the rentiers come out of production as measured in GDP. In other words, to sustain GDP trend growth, the non-rentier group borrows through time. The literature has overlooked the fact that, as different from other forms of inequality that may or may not contribute to insolvency, only a trend rise in rentiers wealth to GDP necessarily contributes to weaken aggregate solvency.[1]

For clarity, some examples of rentier behaviour are firms when accumulating financial assets beyond their productive requirements only to protect their degree of monopoly. Persons are rentiers when accumulating wealth above what is needed for a reasonably prosperous life. Institutions behave as rentiers when accumulating financial assets *per se* (e.g. Pension Funds). We shall come back to this.

The relevance of measuring rentiers wealth

Keynes (1936) had a two-fold concern relating to wealth accumulation by the "financial rentiers". One concern, was that the corresponding decline in the propensity to spend would reduce aggregate demand. Therefore, neither would firms demand additional credit, nor would banks have the incentive to lend. The fall in demand would induce firms to reduce employment. The other concern, was that compared to fixed assets financial assets tend to be more liquid and, hence, more volatile. Therefore, rentiers financial wealth accumulation would tend to raise the volatility in asset prices. Higher volatility would generate uncertainty. We do not

[1] Solvency as the ability of debtors to meet their long-term financial obligations.

discuss Keynes first concern and focus on the second one about potential volatility. To that purpose, we argue that even if banks lend all of the rise in rentiers financial assets to those with a high propensity to spend, the Keynesian concern about the rise in assets price volatility remains. Goda and Lysandrou (2014) discusses this, focussing on the case of rich individuals.

In addition, we discuss the possibility of financial rentiers wealth weakening systemic solvency, which does not emerge as a main concern neither in Keynes' work nor in the recent literature. Palma (2009) discusses this issue, but he does not provide a clear definition of rentier, nor does he specifically measure rentier wealth. That economic inequality weakens the solvency of the economy has been extensively discussed from different viewpoints, particularly after the 2008 crisis. As mentioned above, however, it is only the rise in rentiers wealth relative to GDP that necessarily contributes to reduce the repayment capacity of the non-rentiers.

Neither the rentiers nor the non-rentiers behave as a group, financially or otherwise. Neither wealth is evenly distributed among rentiers, nor is indebtedness evenly distributed among the non-rentiers, but we do not discuss such distributions. Moreover, every day, through the financial system countless debtors relate to creditors of which the rentiers are only a fraction. We do not discuss the complexities of the highly concentrated financial system. These are important limitations, for they prevent us from discussing the degree in which such rise in rentiers financial wealth and its counterpart the rise in non-rentiers debt, could affect world solvency. We make this simplification on the understanding that it allows us to focus on the main subject, which the measurement of total rentiers wealth worldwide.

To be sure, confidence is a key element in a fiduciary financial system like the one prevailing nowadays. Confidence allows debts to be continuously re-financed. Therefore, even if the rise in rentiers financial wealth would tend to weaken solvency, this does not necessarily imply a critical problem if confidence prevails. In the event of a confidence crisis, however, the trend rise in the non-rentiers debt to GDP would only worsen the crisis. This is both, because the solvency of some non-rentiers would be weaker than others and because liquid financial wealth would typically "fly to quality" worsening the insolvency loops. Therefore, other things been equal, a large rentier wealth to GDP ratio would potentially worsen a systemic crisis. However, to focus on our limited objective of measuring rentier wealth we deliberately leave these controversial issues out of this paper.

The theoretical framework

The theoretical context we use to identify rentiers' wealth is based on the Classical-Kaleckian-Keynesian tradition.

As different from the personal distribution, the functional distribution of income and wealth allows to highlight incentives, origins and uses of funds, depending on whether the agent is a wage earner, a capitalist or a rentier. This functional distinction allows us to focus on the rentiers.
In modern capitalism, rentier wealth is held in financial assets that trade in secondary markets, i.e. it is held in liquid financial assets. In a consolidated world balance sheet these assets would match the net liabilities of the non-rentiers involved in production. Because financial assets are more liquid than other forms of wealth, they are more volatile. Large quantities of financial wealth can rapidly change asset type, currency,

location and denomination. In a confidence crisis, as rentiers financial wealth "flies to quality", assets perceived as less solvent would become even less solvent. Thus, volatility can potentially propagate throughout balance sheets and productive assets prices in the world economic system. Thus, compared to other forms of wealth, rentier wealth has a stronger potential to contributing to economic instability and systemic insolvency. Therefore, while accumulating wealth, rentiers are the only agents with the double functionality of both inevitably contributing to the aggregate indebtedness of those involved in production and potentially contributing to systemic asset volatility. If rentier wealth grows out of proportion, such double functionality (indebtedness and volatility) could contribute to systemic insolvency. Therefore, rentier wealth seems, as such, a relevant subject for research.

Worsening inequality does not necessarily imply indebtedness. Only if inequality favours rentiers, debt necessarily emerges. For example, a drop in the wage share in national income matched with a rise in productive investment and profits, would not generate debt. On the other hand, a drop in the wage share matched with a rise in the rent share could potentially generate lack of aggregate demand. This could be off-set with debt by wage earners to sustain their expenditure. Such indebtedness, however, would be with the banks and, in the consolidated balance sheet, would imply a rise of rentiers financial wealth.

There is some controversy about the distinction between wealth and capital. For example, Piketty (2014) does not distinguish capital from other forms of wealth, as Taylor (2014) and Mihalyi and Szelényi (2017), among others, point out. For clarity, let us introduce some general definitions.

Wealth is divided between capital, rentier wealth and non-rentier personal wealth.

Capital is used to obtain monetary profits from the hiring of labour for the production of goods or services. The accumulation of capital implies the re-investment of net monetary profits in productive assets. Productive assets are those that, managed by labour, allow to produce goods or services. Productivity change occurs through productive investment allowing the successful firms to reduce their production costs relative their competitors. Under free competition, successful firms raise their profitability for a while because it inevitably takes time for new technology to spread out. Some firms accumulate sufficient capital to gain some degree of monopoly and extend the duration of their relatively higher profitability. This allows to obtain oligopoly rent by sustainably selling above the price that would prevail under free competition. That part of the firms' equity that is kept idle to protect its degree of monopoly from its competitors is rentiers wealth, it is not capital (Kalecki 1954 y 1971). Oligopoly rent generated within de firm may be partially distributed to the rentiers, i.e. as dividends to the shareholders, as large bonuses to managers and directors or as overpricing to contractors.

Non-rentiers personal wealth is the personal wealth below a certain threshold. Below such threshold, the person would tend to eventually spend most of its income, leaving very little – if anything - for a significant personal accumulation of wealth beyond what is needed for a reasonably prosperous life. With substantial and abundant data, Dynan et al. (2004) econometrically test the old argument that wealth and the propensity to spend are inversely correlated. Persons below the rentier

threshold may contribute with their individual savings to institutional rentiers such as Mutual Funds or Pension Funds. We shall return to this question in the next section when setting the threshold separating rentiers from non-rentiers.

Rentiers wealth is not spent and yields rent only from property rights (Keynes 1930 and Kalecki 1943). A share of rentiers wealth is oligopoly rentier wealth. There is no data to estimate that share. Accounting is not designed to depict oligopoly rent or oligopoly rentier wealth, neither firm accounting nor national accounting is. Thus, it is not possible to measure oligopoly wealth at the level of the firm. We are able, however, to measure total rentier wealth by measuring wealth held by individual rentiers or by institutions with rentier behaviour.

In a world consolidated balance sheet, most assets do not represent aggregate wealth for they cancel against a large chain of liabilities and assets. Assets are rentiers wealth only if held by a rentier or by an institution with rentier behaviour.

Rentier behaviour is that of those who accumulate wealth that yields rent only from property rights. Rentiers are no longer a separate social class like in the times of Ricardo. Rentier behaviour penetrated the institutional fabric of the world economy *à la* Foucault (1979 and 1980). Agents can take hybrid forms. A firm, a person or an institution can activate or deactivate their rentier behaviour depending on whether or not they behave as final accumulators of financial assets. An oligopoly can have both a capitalist and a rentier behaviour. Although oligopoly rentier wealth is ultimately owed by share-holders, it is generated in the workings of the firm during capital accumulation. In line with Keynes writings during the inter-Wars period (e.g. Keynes 1929) we include institutions as rentiers, to the extent that they accumulate financial assets *per se*. For example, Central Banks behave as rentiers when accumulating international reserves that could be spent on imports. More recently, Mutual Funds and Pension Funds have rentier behaviour although their contributors and pensioners do not since they ultimately spend all of their income. A Sovereign Fund behaves as a rentier but not the government that owns it. We shall return to this in the next section when discussing the institutions with a rentier behaviour.

In brief, capitalists accumulate capital as they spend in contracting labour and investing productively. Rentiers accumulate financial assets.

Please note that we do not discuss neither the functionality of rentier behaviour nor the institutional organization of modern world capitalism. This is, we do not discuss whether or not the hoarding of financial assets could be necessary for the functioning of the world economy. For example, we do not discuss if the accumulation of large quantities of foreign reserves by a Central Bank could be functional to the stability of the exchange rate in a peripheral economy. We do not discuss if Pension Funds' assets are necessary to provide some predictability to pensioners' income and some stability to the labour market through time. We do not discuss whether or not the life style of the rich has the effect of stimulating the less wealthy to work harder. Is some degree of personal debt an incentive to make an extra effort? This are not questions that we address in this essay.

A proposal to measure rentiers wealth

Data on functional distribution of income and wealth are remarkably scarce, particularly on rent and rentier wealth. We present a new and simple methodology to estimate rentiers wealth worldwide.

From the definition introduced in the previous section, rentier wealth is composed of assets that are not spend and that generate rent only from property rights. Following this definition, we calculate rentier wealth held by the following agents.

High Net Worth Individuals (HNWI). The available data source (Capgemini) defines HNWI as individuals with investable assets above 1 million US dollars net of primary residence, collectibles and consumer durables. Such threshold is the minimum balance that investment banks usually request to significantly reduce trade commissions and provide personal wealth management services. Below such threshold, savers must opt for Mutual funds or for voluntary deposits in their Pension Fund. Moreover, it seems reasonable to assume that below such threshold the individual propensity to spend is relatively high. This implies that below such threshold, the individual person would tend to ultimately spend most of its income leaving little room for a significant individual rentier wealth accumulation.

Pension Funds*.* The specific function of Pension Funds is to accumulate financial assets *per se*. In a world balance sheet their assets would cancel with their liabilities against their contributors and pensioners. Taken individually, however, the latter eventually spend all of their income while the Pension Funds permanently accumulates financial assets.

Contributions of HNWI are a very small share of the total Pension Funds' revenue. Thus, we may assume that the accounting overlapping between Pension Funds' assets and HNWI wealth is unimportant.

Mutual Funds accumulate financial assets from individuals with savings below the HNWI threshold. Savers in Mutual Funds do not have access to the Wealth Management services that HNWI have. It is a similar case to that of Pension Funds. Individual savers are not rentiers but Mutual Funds are. When constructing our data base, to avoid overlapping in the aggregate, Mutual Funds shares held by Pension Funds are deducted from the former.

Insurance Companies accumulate financial assets against the liabilities of eventual sinister. To avoid overlapping in construction our data base, we deducted Insurance Companies' assets held by Pension Funds from total Pension Funds' assets.

Central Banks behave as rentiers when accumulating international reserves that could be used for imports. The unprecedented accumulation of domestic assets by the main Central Banks after 2008, could be regarded as rentiers wealth to the extent that those assets also belong to rentiers. The so called Quantitative Easing enabled to sustain financial asset prices in general, and rentiers wealth in particular. We exclude these assets held by Central Banks, from our calculation. To include them would only re-inforce our argument about the trend rise in rentiers wealth relative to world GDP.

Sovereign Funds. The mandate of Sovereign Funds is to accumulate foreign assets. Even though their assets cancel against their liabilities against the Central Government, we consider Sovereign Funds as rentiers since their assets could be spend internationally. Governments spend while Sovereign Funds do not. Sovereign Funds' assets result predominantly from Ricardian differential rent from oil fields and mines like, for example, in Norway, Russia, Kazakhstan and the Persian Gulf. In some cases, in countries with a large current account surplus, like China, its Sovereign Fund accumulates assets from exports by public enterprises. Pension Fuds are, we might say, a rentier aspect of a nation state.

To avoid overlapping, we do not consider financial intermediaries such as Investment Banks or Hedge Funds. Such intermediaries hold assets belonging to Pension Funds, Mutual Funds, Sovereign Funds, Insurance Companies or HNWI.

The price of equity shares results from the firm's expected flow of dividends. The price of oligopoly equity shares, include the oligopolistic component of expected profits.[2] Therefore, non-oligopolistic firms distribute lower dividends which, it seems reasonable to assume, covers consumption of the capitalist owners of these firms. With their firm subject to a competitive environment these capitalists would not be able to accumulate wealth above the HNWI threshold. Having the wealth to afford it, rentiers prefer hoarding oligopolies' shares. Moreover, oligopoly shares are more liquid as they tend to trade publicly in stock markets. In general, rentiers prefer liquid assets which allow to "fly to quality" in the event of a confidence crisis.

To the extent that individuals below the HNWI threshold purchase oligopoly shares, we would be underestimating oligopoly rentier wealth in our rentier wealth total. We consider this possible underestimation of minor significance because, such low wealth individuals tend to save in Pension Funds or Mutual Funds or eventually sell their financial assets to finance personal consumption.

The source of rentiers wealth

The source of rentiers wealth accumulation is the flow of rent. Data on rent is remarkably scarce. Theory tells us that rent emerges out of production and it can be either Ricardian rent or Kaleckian rent. We refer to Ricardian rent as the differential compensation paid to the owner for the use of its land or for the extractions from its mine, pit, etc. We refer to Kaleckian rent as the differential proceeds obtained from oligopoly pricing, this is, the differential proceeds obtained from selling above the free competition price, from lending money at a rate above the free competition rate, or from the interest rate on existing rentier financial wealth.

Accounting is not designed and institutions are not prepared, to identify oligopoly pricing. Property income in national accounting includes income by all type of owners who rent out their mobile or immobile property. This includes the owner of a small property, like a pensioner, who rents out a room to make ends meet. Wages in national accounts include that part of oligopoly rent paid out as wages or bonuses to managers and directors. Profits in national accounts do not discriminate oligopoly

[2] In fact, one of the criteria used by rating agencies when estimating shares prices is the percentage of the market that the firm is expected to control considering its current and potential rivals.

profits. Therefore, we do not follow authors like Dünhaupt (2012) who measure oligopoly rent as property income in national accounts.

Our main objective is to measure rentier wealth. Thus, we are not limited by lack of data on oligopoly rent. Nevertheless, all types of oligopoly rent, hidden or not, flow to the rentiers. This is so, for the following reasons. Undistributed oligopoly rent is captured in the price of equity shares owed by rentiers. Oligopoly wealth hidden as a liability in a balance sheet, is an asset for another financial or non-financial firm. This assets-liabilities chain can be large, but it would eventually show as rentiers equity in a consolidated world balance sheet. The oligopoly rent that is paid out as wages or bonuses to managers and directors, is captured as equity accumulation by the HNWI. Oligopoly rent that is distributed as benefits to shareholders shows directly in rentiers' balance sheets.

Our calculation includes the wealth originated in the flow of rent made by all oligopolies, including banks. Note that a fraction of the total profit made by a bank, like that of any other oligopoly, is the non-oligopoly profits that it would obtain under free competition. Therefore, we do not follow authors, like Epstein and Wolfson (2012), who consider total oligopolies' rent as equal to total banks' profits.

The data on rentiers wealth

Table 1 below shows our estimates of rentiers wealth in 1986-2015 de-aggregated in a) International reserves in Central Banks; b) Pension Funds assets; c) Sovereign Funds assets; d) Mutual Funds assets; e) Insurance Companies assets and f) Wealth owed by HNWI.

Data presented in **Table 1** should be treated with caution in order to indicate no more than orders of magnitude or tentative trends. To the best of our knowledge, however, the data presented in **Table 1** are the only available approximation to world-consolidated rentiers' wealth in 1986-2015. As mentioned above, Piketty (2014) does not discriminate capital from wealth, which unable us to use his data.

In their annual reports, Capgemini mentions that their calculations are based on the methodology developed by Davies et al. (2011) who measure world private wealth based on the official home surveys of each country. Capgemini employs a custom survey covering 5,200 HNWI across the 23 major wealth markets in North America, Latin America, Europe, Asia-Pacific, the Middle East, and Africa. In the methodology of their 2016 World Wealth Report Capgemini mentions that "To arrive at global and regional values, country- and region-level weightings, based on the respective share of the global HNWI population, were used. This was done to ensure that the survey results are representative of the actual HNWI population". There is, however, no further explanation on how these weightings were constructed.

With all their shortcomings Capgemini's are the only available world data that allows to separate equity owed by rich individuals from equity owed by those who are not. Other sources of HNWI data are Credit Suisse (Global Wealth Data book) from 2010 onwards and Boston Consulting Group (Global Wealth Report) from 2008 onwards. However, the former does not deduct primary residence and consumer durables and the latter only includes financial assets.

Capgemini's data on HNWI is only available for 2000-2016. It was extended backwards for 1986-1999 with the following 2000-2015 Fully Modified Ordinary Least Squares (FMOLS) regression (1) - please see details in the appendix:

$$\begin{array}{lcccccccc} HNWI & = & 25.43 & + & 0.167 & Forbes_{t+1} & - & 0.141 & D_1 & + & 0.050\ t \\ & & (1.343) & & (0.052) & & & (0.035) & & & (0.008) \end{array} \qquad (1)$$

$$R^2 = 0.991$$

Where $HNWI$ and $Forbes$ are in log. All variables are dated in time. $Forbes$ is billionaire's wealth according to Forbes (2017). Forbes 1987-2016 annual data were moved one year backwards because billionaires declare their wealth with a lag. D_1 is a dummy variable equal to 1 in 2008-2015 and *t* is time. The dummy D_1 in regression (1) captures the structural break in the *Forbes/Capgemini* ratio in 2008. This ratio shows a remarkable leap from 0.07 in 2000-2006 to 0.11 in 2007-2015, as if billionaires were better positioned to cape the crisis and its aftermath.

The following Engle-Granger test results show an acceptable co-integration relationship between $Forbes$ and *Capgemini* in 2000-2015:

Augmented Dickey-Fuller Test for $HNWI$	$t = -2.203$	$p - value = 0.4544$
Augmented Dickey-Fuller Test for $Forbes$	$t = -2.969$	$p - value = 0.1695$
Engle – Granger tau-statistic	$\tau = -6.530$	$p - value = 0.0081$

Regarding *Pension Funds*, the source is OECD data and it covers OECD and non-OECD countries. OECD data is disaggregated by type of contract. The contract types that we include are Autonomous Pension Funds, Non-autonomous Pension Funds and Pension Insurance Contracts. To avoid overlapping with Investment Companies we do not include Investment Companies Managed Funds. We do not include Bank Managed Funds, which are only in the USA and made only of cash, for we do not know how banks manage this cash. Finally, to avoid overlapping we deduct Pension Fund Contracts with Mutual Funds. The latter are included in our Mutual Funds data from World Bank.

Complete data on Pension Funds Assets are available for 2001-2014. Total Pension Funds Assets in the World was forecasted backwards for 1986-2000 and forward for 2015, with the following 2001-2014 Fully Modified Ordinary Least Squares (FMOLS) regression (2) - please see details in the appendix:

$$\begin{array}{lcccccccc} PF^{ExUSA} & = & -16.09 & + & 1.96 & PF^{USA} & + & 12.94 & D_1 & - & 0.78 & PF^{USA}.D_1 \\ & & (2.84) & & (0.175) & & & (5.016) & & & (0.306) \end{array} \qquad (2)$$

$$R^2 = 0.990$$

Where PF^{ExUS} and PF^{US} are in log. All variables are dated in time. PF^{ExUS} is Total Pension Funds Assets in the world excluding the US. PF_t^{US} is United States Pension Funds Assets, which is available for 1986-2015. D_1 is a dummy variable equal to 1 in 2009-2015. Since 2009 the growth of Pension Funds Assets in the rest of the world slowed down relative to the US. This explains the inclusion of D_1 in the equation (2). In 2008, however, there was a once and for all drop in total Pension Funds Assets, which was more pronounced in the US than in the rest of the world. This explains

why the coefficient of D_1 is positive but the coefficient of the interaction between D_1 and PF^{US} is negative.

The following Engle-Granger test results show an acceptable co-integration relationship between PF^{US} and PF^{ExUS} in 2001-2014:

Augmented DF Test for PF_t^{ExUSA}	$t = -2.5082$	$p - value = 0.3194$
Augmented DF Test for PF_t^{USA}	$t = -2.2404$	$p - value = 0.4347$
Engle – Granger tau-statistic	$\tau = -4.6148$	$p - value = 0.0519$

These test results allow us to run the co-integration regression (2) and use it to forecast. The total Pension Funds Assets in 1986-2000 and in 2015, is the sum of the PF^{ExUS} forecast and the PF^{US} data.

Data on *Mutual Funds* is available from World Bank with an acceptable coverage ratio[3] for 2000-2013. Therefore, it was extended backwards for 1986-1999 and forecasted for 2014-2015 with the following 2002-2013 Fully Modified Ordinary Least Squares (FMOLS) regression (3) - please see details in the appendix:

$$\ln(MF^{ExUSA}) = \underset{2.36}{-12.34} + \underset{(0.079)}{1.41}\ \ln(MF^{USA}) \qquad (3)$$

$$R^2 = 0.971$$

where MF^{USA} and MF^{ExUSA} are in log and dated in time. MF^{USA} is United States Mutual Funds, available for 1986-2013, and MF^{ExUSA} is Rest of the World Mututal Funds.

The Engle-Granger test results show a good cointegration relationship between MF^{USA} and MF^{ExUSA} in 2002-2013 as in:

Augmented DF Test for MF^{ExUSA}	$t = -2.5193$	$p - value = 0.3152$
Augmented DF Test for MF^{USA}	$t = -2.5548$	$p - value = 0.3023$
Engle – Granger tau-statistic	$\tau = -4.0367$	$p - value = 0.0440$

These results allow us to run the cointegration regression. Then we sum the forecasted MF^{ExUSA} with the actual MF^{USA} series.

To avoid overlapping in **Table 1**, Pension Funds assets in Mutual Funds and in Insurance Companies were deducted from the two latter respectively. For this purpose, we used the share of Mutual Funds and of Insurance Companies in Pension Funds portfolio in 2001-2015 shown in **Table 3**. In the case of Mutual Funds there are complete data for the USA since 1986. We used the rate of growth of the USA Mutual Funds in the portfolio of the USA Pension Funds to extend the world share backwards. In the case of the share of Insurance companies in Pension Funds portfolio, we observe its stability in 2001-2015. Thus, we assumed the 2001-2015 average as a constant in 1986-2000.

[3] We define coverage as the ratio between the sum of GDP of those countries with data available for a given year and the world GDP. For 2000-2013, at least 51 countries are included every year with a coverage ratio of at least 67%.

Table 1 Rentiers' Wealth Worldwide - Trillions of US dollars

Year	Central Banks Internat. Reservs	Pension Funds	Mutual Funds	Insurance Comp.	Sover-eign Funds	HNWI	Total Rentiers wealth
1986	0.81	2.6	0.9	2.2		9.2	15.7
1987	1.07	2.9	1.0	2.7		9.9	17.5
1988	1.02	3.2	1.1	3.3		10.8	19.4
1989	1.05	3.7	1.4	3.5		11.8	21.5
1990	1.19	3.9	1.5	3.6		12.5	22.8
1991	1.21	4.6	1.8	3.9		13.3	24.8
1992	1.19	5.1	2.2	4.3		13.8	26.6
1993	1.34	5.8	2.8	4.9		15.2	30.1
1994	1.48	6.2	2.9	5.2		16.5	32.2
1995	1.70	7.5	3.6	6.1		17.9	36.8
1996	1.86	8.7	4.4	6.2		19.1	40.4
1997	1.85	10.4	5.5	6.6		19.8	44.2
1998	1.92	12.1	7.0	7.8		19.8	48.7
1999	1.99	14.1	8.8	12.1		21.1	58.1
2000	2.11	13.9	8.7	12.0	1.1	25.5	63.3
2001	2.22	12.6	9.4	12.0	1.0	26.0	63.1
2002	2.61	12.3	8.9	12.5	1.2	26.7	64.2
2003	3.26	14.9	11.1	14.8	1.5	28.8	74.4
2004	3.95	16.7	11.8	17.0	1.9	30.8	82.1
2005	4.52	17.9	13.1	18.9	2.3	33.5	90.2
2006	5.52	20.2	15.8	20.0	3.0	37.2	101.8
2007	7.11	22.4	18.2	21.7	3.3	40.8	113.5
2008	7.77	17.9	15.0	21.8	4.1	32.8	99.5
2009	9.04	20.4	16.2	22.3	4.0	39.0	110.9
2010	10.39	22.7	17.6	23.8	4.4	42.7	121.6
2011	11.50	24.5	17.0	25.7	4.8	42.0	125.5
2012	12.37	26.6	19.6	26.3	5.2	46.2	136.3
2013	12.68	29.5	22.0	23.4	6.1	52.6	146.3
2014	12.55	30.3	21.7	19.6	7.1	56.4	147.7
2015	11.71	30.8	21.4	13.8	7.4	58.7	143.8
Growth rate p. a.	0.107	0.095	0.125	0.088	0.148	0.069	0.085

Source: International Reserves from IMF; Pension Funds financial assets for 2001-2014 from OECD, forecasted for 1986-2000; Mutual Funds and Insurance Companies assets from World Bank's Global Financial Development Database for 2000-2013, forecasted for 1986-2000 and 2014-2015; Sovereign Funds financial assets from Sovereign Wealth Fund Institute; HNWI assets for 2000-2015 from Capgemini, forecasted for 1986-1999,

The portfolio composition of HNWI, Pension Funds and Insurance Companies from 2002 onwards are in **Table 2**, **Table 3** and **Table 4**, respectively. Clearly, their assets are mostly financial assets. Real state is a small fraction. Even the real state owed by HNWI would be mostly financially securitized. This is the case, for example, with shares of apartment buildings in large cities, which are offered for rent. Most of these shares of real estate trade in secondary markets. We do not have data on the portfolio composition of the rest of the rentiers, but it would be reasonable to assume that they are mostly financial too.

Tabla 2: HNWI Portfolio

Year	Real Estate	Alternative Investment (*)	Cash and Cash Equivalents	Fixed Income	Equities	Total (**)
2002	0.15	0.10	0.25	0.30	0.20	1.00
2003	0.17	0.13	0.10	0.25	0.35	1.00
2004	0.16	0.19	0.13	0.24	0.28	1.00
2005	0.16	0.20	0.13	0.21	0.30	1.00
2006	0.24	0.10	0.14	0.21	0.31	1.00
2007	0.14	0.09	0.17	0.27	0.33	1.00
2008	0.18	0.07	0.21	0.29	0.25	1.00
2009	0.18	0.06	0.17	0.31	0.29	1.01
2010	0.19	0.05	0.14	0.29	0.33	1.00
2011	0.14	0.08	0.13	0.31	0.35	1.01
2012	0.15	0.08	0.11	0.29	0.38	1.01
2013	0.20	0.10	0.28	0.16	0.26	1.00
2014	0.19	0.14	0.27	0.16	0.25	1.00
2015	0.18	0.13	0.26	0.17	0.27	1.00
2016	0.18	0.16	0.24	0.18	0.25	1.00
Average	0.17	0.11	0.18	0.24	0.29	1.00
SD	0.03	0.04	0.06	0.06	0.05	

(*) Includes: structured products, hegde funds, derivatives, foreign currency, commodities, private equity.

(**) For the years 2009, 2011 and 2012 the total in the original source is

Source: Capgemini World Wealth Reports throughout 2003-2017.

Table 3: Pension Funds Porfolio

	Land and Buildings	Other Investment (*)	Cash and Deposits	Bonds issued by Public and Private sectors	Mutual Funds	Unallocated Insurance Contracts	Loans	Shares	Total
2001	0.02	0.04	0.02	0.30	0.18	0.04	0.03	0.37	1.00
2002	0.02	0.04	0.02	0.34	0.18	0.04	0.03	0.33	1.00
2003	0.02	0.04	0.02	0.31	0.19	0.04	0.03	0.36	1.00
2004	0.02	0.04	0.02	0.29	0.21	0.04	0.02	0.35	1.00
2005	0.02	0.04	0.02	0.28	0.23	0.04	0.02	0.35	1.00
2006	0.02	0.06	0.02	0.27	0.25	0.04	0.02	0.32	1.00
2007	0.02	0.07	0.02	0.27	0.26	0.04	0.02	0.30	1.00
2008	0.02	0.09	0.03	0.32	0.24	0.04	0.03	0.24	1.00
2009	0.02	0.08	0.02	0.29	0.28	0.04	0.02	0.24	1.00
2010	0.02	0.07	0.02	0.28	0.29	0.04	0.02	0.25	1.00
2011	0.02	0.08	0.03	0.29	0.28	0.04	0.02	0.23	1.00
2012	0.02	0.08	0.03	0.29	0.28	0.04	0.02	0.24	1.00
2013	0.02	0.08	0.03	0.28	0.30	0.04	0.02	0.25	1.00
2014	0.02	0.08	0.02	0.30	0.28	0.04	0.02	0.24	1.00
2015	0.02	0.09	0.02	0.30	0.29	0.04	0.02	0.23	1.00
Average	0.02	0.07	0.02	0.29	0.25	0.04	0.02	0.29	1.00
SD	0.002	0.020	0.003	0.018	0.042	0.002	0.004	0.053	

(*) Other investments: financial assets not included in the above categories e.g. Hedge Funds, derivatives, commodities, trade credits and advances and other accounts receivables and payables.
Source: OECD and Non-OECD economies for 2001-2015 from OECD Dataset: Funded Pension

Table 4 **:** Insurance Companies Portfolio

Year	Land and Buildings	Other (*)	Bonds	Loans	Mortgages	Equity shares	Total
2001	0.03	0.09	0.51	0.07	0.09	0.22	1.00
2002	0.04	0.09	0.58	0.07	0.04	0.19	1.00
2003	0.03	0.10	0.57	0.06	0.03	0.20	1.00
2004	0.03	0.10	0.58	0.05	0.03	0.20	1.00
2005	0.03	0.12	0.56	0.05	0.03	0.22	1.00
2006	0.03	0.20	0.49	0.06	0.04	0.19	1.00
2007	0.03	0.24	0.47	0.06	0.03	0.17	1.00
2008	0.02	0.30	0.46	0.07	0.03	0.12	1.00
2009	0.03	0.13	0.58	0.06	0.04	0.17	1.00
2010	0.02	0.12	0.62	0.05	0.04	0.14	1.00
2011	0.02	0.13	0.62	0.04	0.04	0.13	1.00
2012	0.02	0.13	0.63	0.06	0.04	0.12	1.00
2013	0.02	0.13	0.61	0.05	0.04	0.14	1.00
Average	0.03	0.14	0.56	0.06	0.04	0.17	1.00
SD	0.01	0.06	0.06	0.01	0.01	0.04	

Sources: OECD and Non-OECD economies for 2001-2013 from OECD Dataset: Destinations of investments by direct insurance or reinsurance companies. Included ownerships: domestic undertakings; branches and agencies of foreign undertakings.

Table 5: Rentiers' Wealth to GDP ratio, Rentiers Wealth Variation to GDP and Income Share of Top 1% of Population Worldwide

Year	World GDP current US$ Trillions	Rentiers Wealth / GDP	VAR of Rentiers Wealth / GDP	SD (VAR of Rentiers Wealth/GDP)	Income share of world's Top 1% of pop. (*)
1986	15.0	1.05			0.103
1987	17.1	1.03	0.103		0.115
1988	19.1	1.02	0.099	0.00	0.114
1989	20.1	1.07	0.103	0.00	0.114
1990	22.5	1.01	0.060	0.03	0.110
1991	23.9	1.04	0.085	0.02	0.106
1992	25.4	1.05	0.068	0.01	0.107
1993	25.8	1.17	0.138	0.05	0.107
1994	27.8	1.16	0.076	0.04	0.107
1995	30.9	1.19	0.149	0.05	0.118
1996	31.5	1.28	0.111	0.03	0.126
1997	31.4	1.41	0.122	0.01	0.130
1998	31.3	1.56	0.144	0.02	0.137
1999	32.5	1.79	0.289	0.10	0.147
2000	33.6	1.89	0.154	0.10	0.134
2001	33.3	1.89	-0.003	0.11	0.129
2002	34.6	1.85	0.030	0.02	0.130
2003	38.9	1.91	0.262	0.16	0.139
2004	43.8	1.87	0.176	0.06	0.152
2005	47.4	1.90	0.173	0.00	0.158
2006	51.3	1.98	0.225	0.04	0.159
2007	57.8	1.96	0.203	0.02	0.146
2008	63.3	1.57	-0.221	0.30	0.134
2009	60.0	1.85	0.191	0.29	0.141
2010	65.9	1.85	0.162	0.02	n.a.
2011	73.2	1.72	0.054	0.08	n.a.
2012	74.7	1.83	0.145	0.06	n.a.
2013	76.8	1.91	0.130	0.01	n.a.
2014	78.7	1.88	0.017	0.08	n.a.
2015	74.3	1.94	-0.052	0.05	n.a.
Growth rate p. a.	0.058	0.025			
Average			0.110	0.063	0.128

(*) Approximate calculation as the average of the Top 1% of each country weighted by its GDP relative to the GDP of all the countries included. For every year the GDP of countries included is larger than 2/3 of world GDP. Data is lagged one year because it comes out of tax declarations.

Source: Rentiers Wealth from Table 1; GDP from World Bank; Top 1% from The World Wealth and Income Database.

The data on Top 1% world wide

The approximate income share of the World Top 1% of the population in **Table 5** is a weighted average calculated as the sum of each country's top 1% income multiplied by the country's GDP and divided by the sum of the GDP of all the countries considered.[4] Clearly, ours is just a gross approximation. To obtain the precise income share of the world top 1% of the population, we should know the income of the individuals in the world independently from their country of origin. These data are not available. We assume that the data available for countries representing at least 2/3 of world GDP represents the world total. After 2009 data coverage gradually drops to reach 40% of world GDP in 2015. The USA data is complete for the entire 1986-2014 period. Because the USA was permanently more unequal than the average, the 2010-2015 aggregate data is probably increasingly biased towards inequality. Thus, we do not use the 2010-2015 data.

Rentiers wealth, rent share and volatility

The intention in this paper is not to forecast but simply to discuss trends and relative magnitudes. Reliability is not homogenous for the different data sources and our calculations must be taken with extreme caution. To the best of our knowledge, however, these are the only available calculations of rentiers wealth worldwide.

Rentiers wealth to GDP ratio rose from 1.05 in 1986 to 1.94 in 2015 (please see **Table 5)**. **Graph 1** illustrates that, during the nineteen nineties, rentiers wealth to GDP leaped from a relatively stable average of 1.04 in 1986-1992 to a new *plateau* of 1.86 on average in 2000-2015. These are relatively large values compared, for example, to the total world public net debt to GDP ratio of 0.79 in 2013, according to the latest IMF data for countries representing 99.9% of world GDP.[5]

Goda (2017) argues that the HNWI concentration of wealth (the absolute amount of wealth held by the HNWI) may be at its historical peak. Note in **Table 1**, that the other rentiers wealth (the institutional rentiers wealth) increased faster than HNWI wealth in 1986-2015. Therefore, if Goda was correct, total rentiers wealth concentration could be at a historical peak. Unfortunately, there is no data prior 1986 to discuss this.

Throughout 1986-2015, rentiers wealth to GDP grew at an average of 2.5% p.a. On the conventional assumption of a relatively stable capital/output ratio (e.g. Taylor 2014), this implies an equivalent trend rise in rentiers financial wealth relative to productive capital. This would imply the trend financiarization of total wealth. For example, if the world-wide capital output ratio was relatively stable in the order of

4. Source: World Wealth and Income Database by Paris School of Economics. Countries included are Argentina, Australia, Canada, China, Colombia, Denmark, Finland, France, Germany, India, Ireland, Italy, Japan, Korea, Malaysia, Mauricio, Holland, New Zealand, Norway, Portugal, Singapore, South Africa, Spain, Sweden, Switzerland, Taiwan, Great Britain, USA and Uruguay.

5 "General Government net debt is calculated as gross debt minus financial assets corresponding to debt instruments. These financial assets are: monetary gold and SDRs, currency and deposits, debt securities, loans, insurance, pension, and standardized guarantee schemes, and other accounts receivable.", *IMF World Economic Outlook Database.*

3.5, the rentiers financial wealth to productive capital would have leaped from 0.29 in 1986-1992 to 0.54 in 2000-2015.

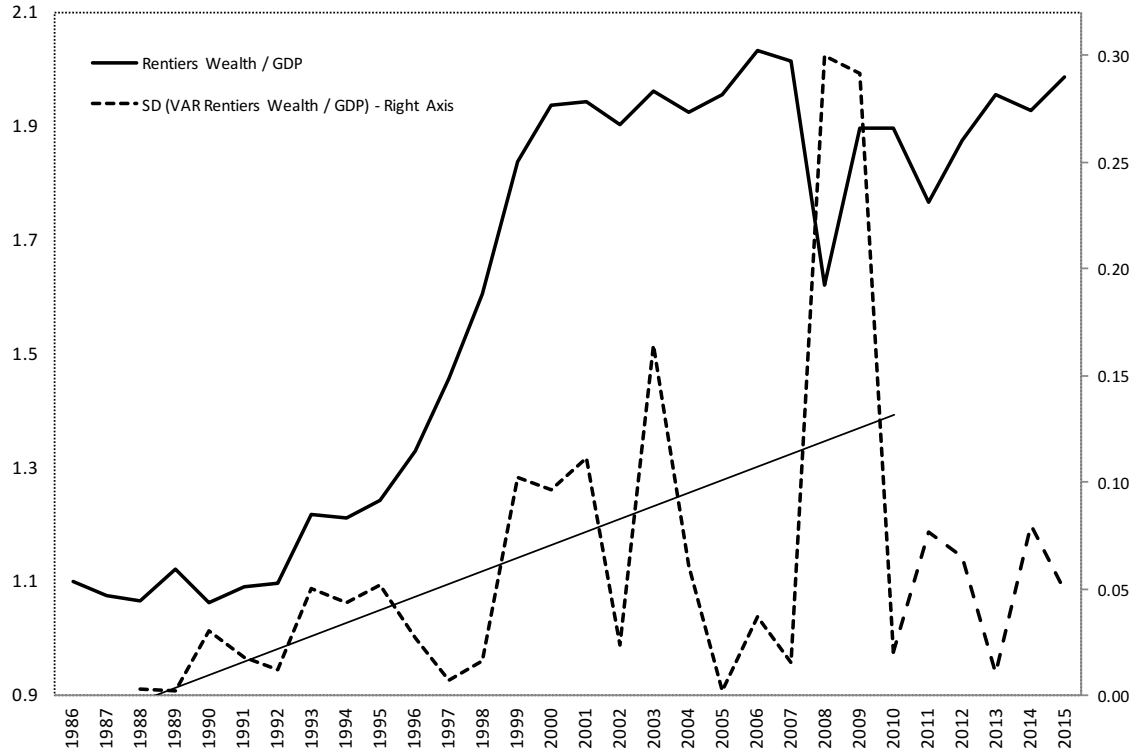
The trend rent share in world income can be approximated as the ratio between rentiers wealth variation over GDP [(VAR W)/GDP] in **Table 5**. This calculation does not allow us to separate variations in wealth resulting only from changes in unfunded expectations about future yields, from variations in wealth corresponding to the actual yields finally obtained in production. The latter yields resulting from Ricardian or Kaleckian rent. Unfunded expectations can be quite significant in the medium-term. Frustrated expectations occurred, for example, during the asset prices boom towards the end of the last century and the subsequent collapse. Also during the boom in 2002-2007 and the crisis in 2007-2008. During 1986-2015 several unfunded booms and the subsequent frustrations of expectations occurred. Thus, let us assume that changes in asset prices resulting only from unfunded optimism or pessimism cancelled each other out through time. Consequently, we may take the 1986-2015 long-term value of the ratio between wealth variation and GDP as a gross approximation to the rent share in world income during that period.

Taking the entire 1986-2015 period, the annual rent share fluctuated widely around its 11% average without a clear trend (please see **Table 2**). Given the lack of a clear long-term trend, we may assume that the rentiers appropriated an average of 11% of nominal GDP throughout 1986-2015. This appropriation represents net accumulation of rentier wealth.

The large volatility in the rent share is presented in **Table 2** and **Graph 1.** This volatility is measured as the annual SD of the rent share. A similar volatility pattern occurred in international financial indices, such as the S&P index or the MSCI index. Volatility in the rent share and in the financial markets show a trend rise through-out 1986-2009. Such volatilities drop abruptly after the crisis. The so called Quantitative Easing policy implemented by the main Central Banks after 2008 seems to have succeeded in stabilizing the largest financial markets. Apart from other effects on the world economy that we do not discuss in this work, such QE policy of massively purchasing the same assets held by rentiers, contributed to sustain the rentiers wealth to GDP ratio at its high plateau (please see **Graph 1**).

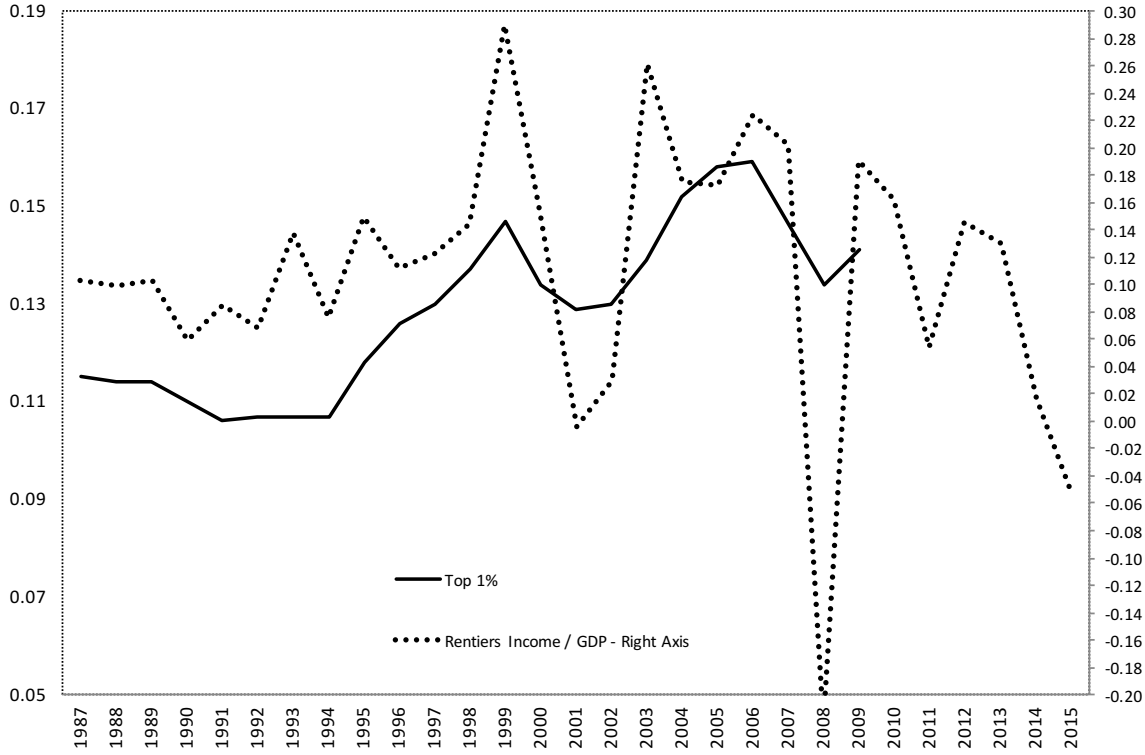
Our approximate calculation of the rent share can be compared to our approximate calculation of the income share of the Top 1% of world population (please see **Table 2** and **Graph 2**). Unfortunately, we do not have sufficient data about the Top 1% after 2009. Both series suggest a deterioration in both functional and personal income distribution, especially during the outburst of neo-Liberalism in 1994-2006. Dullien et al. 2010, Epstein and Wolfson 2012, Hein 2012 y 2015, Hein and van Treeek 2010 y Palma 2009, discuss neo-liberal policies and their consequences over income distribution. Nevertheless, it is interesting to observe that these two series, extracted from very different sources, tend to move in line with each other.

Graph 1: Rentiers Worldwide Wealth to GDP ratio and Volatility



Source: Table 1 and Table 2

Graph 2: Rent Share in GDP and Income of Top 1% of Population Worldwide



Source: Table 1

Conclusions

A relatively high rent share in world income implies a proportionately lower income share for the non-rentiers. Rent is not spent but lent, while non-rentiers ultimately spend their income. Therefore, to sustain their spending the non-rentiers must borrow through the financial system. A consolidated world balance sheet would show the rentiers as the ultimate lenders. This is not a new phenomenon, although it may be new in its magnitude. Unfortunately, data on worldwide rentiers wealth does not exist prior 1986. To the best or our knowledge, ours is the first calculation. The available 29 annual observations in 1986-2015 are not enough for a statistically robust analysis. Moreover, the data reliability is weak and must be taken with extreme caution. With these limitations, we have observed that rentiers wealth relative to GDP increased during the nineteen-nineties from a relatively stable average of 1.04 in 1986-1992 to a new *plateau* of 1.86 on average in 2000-2015.

The trend rise in rentiers wealth to GDP shows some correlation with the rise in asset prices volatility up to the financial crisis in 2008. The asset price stabilisation policy adopted by the main Central Banks thereafter, seems to have worked. In sustaining asset prices, however, the so called Quantitative Easing policy contributed to sustain rentiers wealth at the above mentioned relatively high average.

A rise in GDP world growth rate would not necessarily reduce the rentiers wealth to GDP ratio, if a high rent share leads non-rentiers to borrow to sustain their trend spending. A drop in non-rentiers debt would not reduce such ratio, if non-rentiers spending proportionately declines causing a decline in GDP growth. Only GDP growth based on a redistribution of income in favour of non-rentiers would reduce the rentiers wealth to GDP ratio.

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Appendix 1: HNWI Forecast – Eviews Estimation Output, DFA Unit Root Test and Engle-Granger Test.

Null Hypothesis: FORBES has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=3)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.969228	0.1695
Test critical values:	1% level	-4.667883	
	5% level	-3.733200	
	10% level	-3.310349	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 16

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(FORBES)
Method: Least Squares
Date: 06/02/17 Time: 11:21
Sample: 2001 2016
Included observations: 16

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FORBES(-1)	-0.800817	0.269706	-2.969228	0.0109
C	8.06E+11	3.62E+11	2.224712	0.0444
@TREND("2001")	3.01E+11	1.06E+11	2.848566	0.0137

R-squared	0.404968	Mean dependent var	3.50E+11
Adjusted R-squared	0.313424	S.D. dependent var	8.09E+11
S.E. of regression	6.71E+11	Akaike info criterion	57.46784
Sum squared resid	5.84E+24	Schwarz criterion	57.61270
Log likelihood	-456.7427	Hannan-Quinn criter.	57.47525
F-statistic	4.423774	Durbin-Watson stat	1.879246
Prob(F-statistic)	0.034238		

Null Hypothesis: HNWI has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=3)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.203291	0.4544
Test critical values:	1% level	-4.728363	
	5% level	-3.759743	
	10% level	-3.324976	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 15

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(HNWI)
Method: Least Squares
Date: 06/02/17 Time: 11:23
Sample (adjusted): 2001 2015
Included observations: 15 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
HNWI(-1)	-0.611552	0.277563	-2.203291	0.0479
C	1.36E+13	6.10E+12	2.233164	0.0454
@TREND("2000")	1.43E+12	5.92E+11	2.421213	0.0322

R-squared	0.332383	Mean dependent var	2.21E+12
Adjusted R-squared	0.221114	S.D. dependent var	3.43E+12
S.E. of regression	3.03E+12	Akaike info criterion	60.49110
Sum squared resid	1.10E+26	Schwarz criterion	60.63271
Log likelihood	-450.6832	Hannan-Quinn criter.	60.48959
F-statistic	2.987195	Durbin-Watson stat	1.966070
Prob(F-statistic)	0.088545		

Date: 06/02/17 Time: 13:47
Series: FORBES1 HNWI
Sample: 2000 2014
Included observations: 15
Null hypothesis: Series are not cointegrated
Cointegrating equation deterministics: C @TREND D1
Automatic lags specification based on Schwarz criterion (maxlag=1)

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
FORBES1	-4.912903	0.0651	-49.43572	0.0000
HNWI	-6.529622	0.0081	-151.0113	0.0000

*MacKinnon (1996) p-values.
Warning: p-values do not account for user-specified deterministic regressors.
Warning: p-values may not be accurate for fewer than 20 observations.

Intermediate Results:

	FORBES1	HNWI
Rho - 1	-1.242971	-1.480186
Rho S.E.	0.253001	0.226688
Residual variance	1.42E+22	1.74E+23
Long-run residual variance	1.33E+23	1.07E+25
Number of lags	1	1
Number of observations	13	13
Number of stochastic trends**	2	2

**Number of stochastic trends in asymptotic distribution

Dependent Variable: LOG(HNWI)
Method: Fully Modified Least Squares (FMOLS)
Date: 06/02/17 Time: 11:29
Sample (adjusted): 2000 2015
Included observations: 16 after adjustments
Cointegrating equation deterministics: C @TREND D1
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(FORBES1)	0.167088	0.051763	3.227964	0.0072
C	25.43405	1.343329	18.93360	0.0000
@TREND	0.049961	0.008077	6.185795	0.0000
D1	-0.140584	0.035459	-3.964699	0.0019

R-squared	0.991319	Mean dependent var	31.25303
Adjusted R-squared	0.989148	S.D. dependent var	0.270931
S.E. of regression	0.028223	Sum squared resid	0.009558
Long-run variance	0.000854		

Appendix 2: Pension Funds Forecast – Estimation Output, DFA Unit Root Test and Engle-Granger Test.

Null Hypothesis: PF_EX_USA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.508155	0.3194
Test critical values:	1% level	-4.886426	
	5% level	-3.828975	
	10% level	-3.362984	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 13

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(PF_EX_USA)
Method: Least Squares
Date: 06/01/17 Time: 12:34
Sample (adjusted): 2002 2014
Included observations: 13 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PF_EX_USA(-1)	-0.766311	0.305528	-2.508155	0.0310
C	2770997.	950370.9	2.915701	0.0154
@TREND("2001")	581581.1	233935.4	2.486076	0.0322

R-squared	0.387740	Mean dependent var	732738.0
Adjusted R-squared	0.265288	S.D. dependent var	865740.1
S.E. of regression	742072.0	Akaike info criterion	30.07145
Sum squared resid	5.51E+12	Schwarz criterion	30.20183
Log likelihood	-192.4645	Hannan-Quinn criter.	30.04466
F-statistic	3.166468	Durbin-Watson stat	1.844113
Prob(F-statistic)	0.086036		

Null Hypothesis: PF_USA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.240376	0.4347
Test critical values:	1% level	-4.800080	
	5% level	-3.791172	
	10% level	-3.342253	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 14

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(PF_USA)
Method: Least Squares
Date: 06/01/17 Time: 12:35
Sample: 2001 2014
Included observations: 14

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PF_USA(-1)	-0.651065	0.290605	-2.240376	0.0467
C	5601505.	2520058.	2.222768	0.0481
@TREND("2001")	397922.5	160956.2	2.472241	0.0310

R-squared	0.357200	Mean dependent var	555804.4
Adjusted R-squared	0.240327	S.D. dependent var	1203997.
S.E. of regression	1049395.	Akaike info criterion	30.75273
Sum squared resid	1.21E+13	Schwarz criterion	30.88968
Log likelihood	-212.2691	Hannan-Quinn criter.	30.74006
F-statistic	3.056314	Durbin-Watson stat	1.757245
Prob(F-statistic)	0.087987		

Date: 06/01/17 Time: 12:33
Series: PF_EX_USA PF_USA
Sample: 2001 2014
Included observations: 14
Null hypothesis: Series are not cointegrated
Cointegrating equation deterministics: C D1
Additional regressor deterministics: @TREND
Automatic lags specification based on Schwarz criterion (maxlag=1)

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
PF_EX_USA	-4.614757	0.0519	-50.93137	0.0000
PF_USA	-4.166260	0.0904	-50.56725	0.0000

*MacKinnon (1996) p-values.
Warning: p-values do not account for user-specified deterministic regressors.
Warning: p-values may not be accurate for fewer than 25 observations.

Intermediate Results:

	PF_EX_USA	PF_USA
Rho - 1	-1.482145	-1.446638
Rho S.E.	0.321175	0.347227
Residual variance	3.16E+11	3.22E+11
Long-run residual variance	2.59E+12	2.73E+12
Number of lags	1	1
Number of observations	12	12
Number of stochastic trends**	1	1

**Number of stochastic trends in asymptotic distribution

Dependent Variable: LOG(PF_EX_USA)
Method: Fully Modified Least Squares (FMOLS)
Date: 06/01/17 Time: 12:23
Sample (adjusted): 2001 2014
Included observations: 14 after adjustments
Cointegrating equation deterministics: C D1
Additional regressor deterministics: @TREND
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(PF_USA)	1.958530	0.175436	11.16378	0.0000
LOG(PF_USA)*D1	-0.782776	0.306263	-2.555897	0.0286
C	-16.08715	2.837476	-5.669529	0.0002
D1	12.93819	5.015591	2.579594	0.0274

R-squared	0.944083	Mean dependent var	15.86330
Adjusted R-squared	0.927307	S.D. dependent var	0.412216
S.E. of regression	0.111140	Sum squared resid	0.123521
Long-run variance	0.005899		

Appendix 3: Mutual Funds Forecast – Eviews Estimation Output, DFA Unit Root Test and Engle-Granger Test.

Null Hypothesis: USA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.554753	0.3023
Test critical values:	1% level	-4.992279	
	5% level	-3.875302	
	10% level	-3.388330	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 12

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(USA)
Method: Least Squares
Date: 07/05/17 Time: 12:49
Sample: 2002 2013
Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
USA(-1)	-0.967981	0.378894	-2.554753	0.0310
C	6.66E+12	2.59E+12	2.571097	0.0301
@TREND("2002")	6.35E+11	2.25E+11	2.819773	0.0201

R-squared	0.472121	Mean dependent var	6.68E+11
Adjusted R-squared	0.354814	S.D. dependent var	1.12E+12
S.E. of regression	8.96E+11	Akaike info criterion	58.09177
Sum squared resid	7.22E+24	Schwarz criterion	58.21299
Log likelihood	-345.5506	Hannan-Quinn criter.	58.04688
F-statistic	4.024673	Durbin-Watson stat	1.616160
Prob(F-statistic)	0.056417		

Null Hypothesis: MUTUAL_EX_USA has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on Modified SIC, maxlag=2)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.519309	0.3152
Test critical values:	1% level	-4.992279	
	5% level	-3.875302	
	10% level	-3.388330	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 12

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(MUTUAL_EX_USA)
Method: Least Squares
Date: 07/05/17 Time: 12:49
Sample: 2002 2013
Included observations: 12

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MUTUAL_EX_USA(-1)	-0.834480	0.331234	-2.519309	0.0328
C	4.87E+12	1.71E+12	2.852355	0.0190
@TREND("2002")	7.09E+11	2.95E+11	2.404300	0.0396

R-squared	0.413831	Mean dependent var	9.23E+11
Adjusted R-squared	0.283571	S.D. dependent var	1.38E+12
S.E. of regression	1.17E+12	Akaike info criterion	58.62678
Sum squared resid	1.23E+25	Schwarz criterion	58.74800
Log likelihood	-348.7607	Hannan-Quinn criter.	58.58189
F-statistic	3.176966	Durbin-Watson stat	1.910789
Prob(F-statistic)	0.090386		

Date: 07/05/17 Time: 12:39
Series: MUTUAL_EX_USA USA
Sample: 2002 2013
Included observations: 12
Null hypothesis: Series are not cointegrated
Cointegrating equation deterministics: C
Automatic lags specification based on Schwarz criterion (maxlag=1)

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
MUTUAL_EX_USA	-4.036700	0.0440	-15.56858	0.0069
USA	-4.127511	0.0387	-17.07292	0.0021

*MacKinnon (1996) p-values.
Warning: p-values may not be accurate for fewer than 20 observations.

Intermediate Results:

	MUTUAL_E...	USA
Rho - 1	-1.415325	-1.552083
Rho S.E.	0.350614	0.376034
Residual variance	2.32E+23	1.33E+23
Long-run residual variance	2.32E+23	1.33E+23
Number of lags	0	0
Number of observations	11	11
Number of stochastic trends**	2	2

**Number of stochastic trends in asymptotic distribution

Dependent Variable: LOG(MUTUAL_EX_USA)
Method: Fully Modified Least Squares (FMOLS)
Date: 06/28/17 Time: 15:55
Sample: 2002 2013
Included observations: 12
Cointegrating equation deterministics: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(USA)	1.410623	0.078643	17.93715	0.0000
C	-12.34271	2.355583	-5.239770	0.0004

R-squared	0.971155	Mean dependent var	29.91325
Adjusted R-squared	0.968270	S.D. dependent var	0.354070
S.E. of regression	0.063070	Sum squared resid	0.039778
Long-run variance	0.004124		