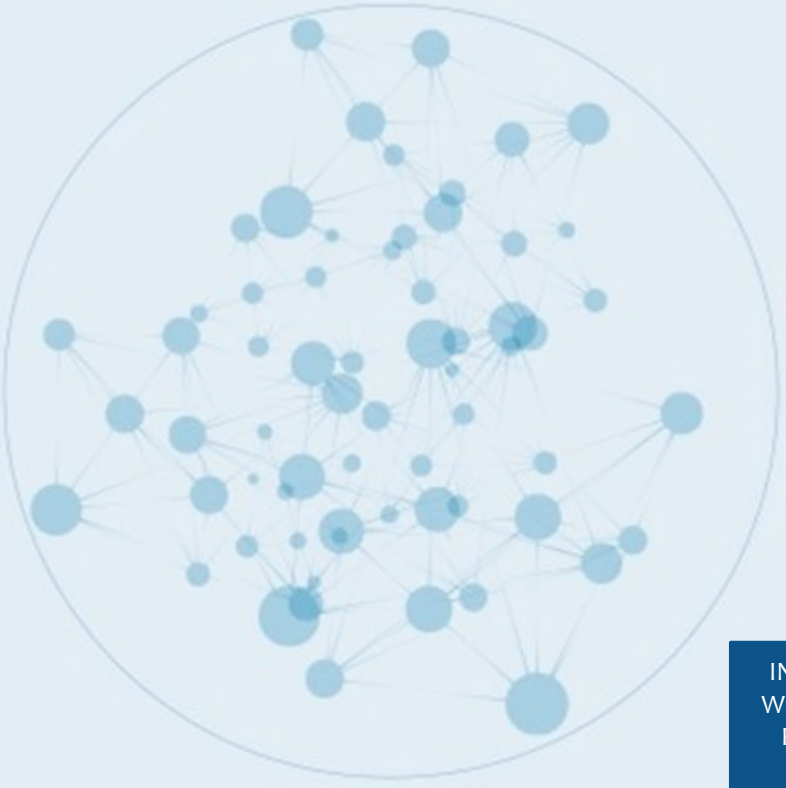
Inquiry: Design of a
Sustainable Financial System

UNEP

THE VALUE OF EVERYTHING



INQUIRY WORKING PAPER

15/11

December 2015

The UNEP Inquiry

The Inquiry into the Design of a Sustainable Financial System has been initiated by the United Nations Environment Programme to advance policy options to improve the financial system's effectiveness in mobilizing capital towards a green and inclusive economy—in other words, sustainable development. Established in January 2014, it published its final report, The Financial System We Need, in October 2015.

More information on the Inquiry is at: *www.unep.org/inquiry* and *www.unepinquiry.org* or from: Ms. Mahenau Agha, Director of Outreach *mahenau.agha@unep.org*.

About this report

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Acknowledgements

The Inquiry would like to thank the following individuals who provided thoughtful remarks on earlier drafts of this report, including Angelo Calvello, Todd Cort, Matthias Kopp, David Lubin, Gabriel Thoumi and Stephen Viederman.

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Introduction

Discussions regarding the global financial system often happen without a complete and robust understanding of the total value, impact and relevance of all stocks and flows. Indeed, even the "Value of Everything" is not known, insofar as that being measured as the total present day market value of all global capital assets, let alone the relevance of ongoing flows of commerce as they impact the system.

The purpose of this paper is to begin the process of clarifying global asset value especially as may be affected by the sustainability (or lack thereof) of financial systems, and not just that which is represented by institutional assets under management. Often such attempts to assess the value of financial markets only look at total managed assets by financial institutions, or through attempts to assess somewhat isolated international money flows via say Community Development Financial Institutions alone, among what is in effect a series of partial analysis on this question that exist in the literature.

This paper, therefore, will answer this question of what is the actual total value of all global asset classes individually and in aggregate, towards helping inform money flows as they relate to this overall global stock, and how do they or can they influence total value, as well as how should these stocks and flows shift to enable the financial system to become truly sustainable and how to measure for that.

Attempts have been made to assess the value of global assets but they are always insufficient for purpose, either missing categories such as the value of state-owned enterprises, the value of people's homes, the true nature of cash in the market and more. Such partial analysis has revealed useful aspects of this single total value figure, which we will make good use of, but our picture will be holistic and complete, or will certainly attempt to be so.

The first place to start then is in establishing categories of assets needed to be understood in order to fully assess a static, present day Value of Everything.

We start with a look at publicly traded companies, fixed income as an asset class, as well as property owned by individuals or in managed portfolios. These are the three largest categories of assets by value. State-owned enterprises need to be added to this picture as does the total value of infrastructure portfolios (both through direct investment and project finance). Private equity and venture capital are rising in relevance and they too will be assessed as will the value of so-called real assets encompassing forests, commodities and more, and finally the value of issued dollars in the market both in cash and in the nominal value of instruments not directly tied to assets.

This analysis will represent a first single static Value of Everything, in effect the total value of global assets.

1 The Value of Everything

1.1 Public Equity

The first and easiest place to start this analysis is in the value of global public equity. Companies which trade on public markets have shares outstanding, either traded or sitting in their treasuries, and multiplying this by the current share price gives a total value figure of public equity as an asset class. Care needs to be applied to ensure double counting is avoided, such as where companies trade on multiple stock exchanges or are represented by American depositary receipts (ADRs) which are not separate entities from the underlying corporation in question.

Our own analysis showed this figure to be US$65 trillion as of early 2008,[1] before stock valuations sank in the wake of the subsequent Global Financial Crisis (GFC). This analysis did exactly what we describe just above, namely looked one company at a time, calculated the market capitalization of each individual company listed on a global stock exchange and added that up to this one single figure.

To the present day, there have not been significant new issuances of securities through IPOs or secondary offerings to dramatically change this picture. Markets have largely recovered their valuation up to March 2015. The MSCI World representing 85% of global market capitalization is in effect directly even since this time.[2] McKinsey's Global Institute (MGI) also approximated US$64 trillion at the end of 2007, directly correlating with our own individual analysis. The MSCI Emerging Markets Index also remains largely flat since the GFC.[3]

Global IPO issuance has largely slowed down, with Alibaba in 2014 being an outlier of sorts, and just over US$200 billion of new issuance occurring as a result, up almost 50% from the year prior.[4] This represented the highest level of issuance since 2010, with little occurring in 2008-9 due to the GFC. We estimate at most an additional US$1 trillion (perhaps slightly less) of new public company stock[5] has been issued since the GFC, making the total value of global public equity now between US$65-70 trillion. We will use US$67 trillion as an acceptable present day estimate. However, this figure changes not only daily due to price variability, but millisecond to millisecond, based on the presently accepted share price of each company, based on its own midpoint of buyer and seller sentiment at any moment, so an overall estimated total suffices.

1.2 Fixed Income

Fixed income is perhaps a slightly tricky kettle of fish in some ways, as it represents an overall pool of cash lent out to other parties, therefore placing a dollar value on it has some caveats, namely that the owner of a fixed income instrument or portfolio does not own the underlying company unless it were to go bankrupt. And so one can say that fixed income as an overall asset class represents both a stock and a flow in the global financial system. That said, the total value of all fixed income instruments in issue can be readily calculated, and has been done so to the tune of almost exactly US$100 trillion[6] with US values at US$35 trillion, developed excluding the US at US$50 trillion, and emerging market debt valued at US$14 trillion for a total of US$99 trillion as of the end of 2014, which we will use as our current estimate. This figure would include corporate, sovereign, treasuries, high yield and municipal debt in all countries.

The Nature of Global Lending

Beyond estimates of the value of fixed income as a global assets class, the true size of global lending is not well understood.

For example, as seen above, the value of fixed income is seen as US$100 trillion, the largest global asset class of all, while direct lending and other forms of loans are increasingly not visible whether through black market means as is seen typically in the developing world, or through aggregations of loans to public and private companies from banking operations that otherwise are not accessible in the public domain.

Categorization of global lending is needed, along with an estimation of areas that are not readily transparent, in order to get a first, full grasp of the size of global lending. Ultimately, there is lending to individuals and families, loans to organizations including public companies, and debt issued by governments on a national and regional basis. Some of this debt will be listed on exchanges and fully transparent, while much lending is direct between a source of funds and the recipient in question, sometimes but not always involving regulated institutions.

SIFMA lists US debt at just under US$39 trillion as of 2014 across municipal, Treasury, mortgage-related, corporate debt, other federal agency and asset-backed securities with an additional US$5.8 trillion issued in 2014, approximately US$1.5 trillion per quarter, and with outstanding issuance rising roughly US$1 trillion per year implying almost US$5 trillion per year of debt having settled or otherwise reaching maturity.

We will use JPMorgan's Little Book estimate of US$100 trillion as a starting point as above, understanding that this is subject to further refinement and granularity.

As to what is in the "real economy," we look first to Figure 1 below, and see quickly that much of this US$450 trillion is in the real economy. Property is all in the real economy, as is infrastructure, and non-real economy or financial aspects of public companies can be estimated at 20% of the US$70 trillion amount, for example. Fixed income, cash and derivatives by definition are not part of the real economy of physical things.

We thereby can estimate the "real economy" portion of the value of global capital assets at US$225 trillion or exactly half of the global assets.

To further understand the effect of lending on the real economy, then, lending needs to be broken down further into its components, but we take it that much lending is performed for the purpose of building infrastructure, providing mortgages for homes and otherwise providing capital to businesses for the purpose of creating goods, and therefore annual new levels of lending would need be understood as to how it supports and fosters health and growth in the real economy.

If 80% of existing fixed income goes into supporting the real economy, then we can see that US$80 trillion is supporting US$225 trillion in value as a first observation, and that an ongoing flow of new lending is needed to support both existing and future flows and valuations of the real economy.

In the US, per the SIFMA analysis above there was over US$5 trillion of new debt, mostly offset by retiring debt, for a net increase of just over US$1 trillion.

The Bank for International Settlements (BIS) is an especially good resource for financial flow data, with their March 2015 Highlights of Global Financial Flows showing at the end of September 2014 credit in US dollars to non-bank borrowers outside the United States totalling US$9.2 trillion, an increase of 9% over the previous year, representing an increase of over 50% since the end of 2009. The breakdown of this US$9.2 trillion is reflected by US$4.2 trillion of debt securities and US$4.9 trillion of bank loans.

Furthermore, net of repayments, cumulative international debt securities issuance in 2014 was US$ 178 billion for advanced economies and US$359 billion for emerging markets, suggesting a net additional US$1 trillion was seen in 2014 in both the US and separately, outside the US, for a total of US$2 trillion in net new global ending in 2014.

1.3 Property

Often ignored in conversations about the value of global assets is the value in people's homes. In the US, for example, after the various Enron, WorldCom, Adelphia and other accounting scandals of the early 2000s, many individuals sought to maximize the value of their homes having lost trust in public stock markets. In fact, many pension funds at best broke even in such markets during the 2000s. Combining the domino effect of loss of trust in markets with a race to seek value in real estate, which was also encouraged by looser forms of credit to encourage home ownership, and the value of home-owned property proceeded to collapse. Many homeowners walked away from "underwater" mortgages. Property markets as a result can be quite volatile and hard to estimate, but best efforts show that approximately US$75 trillion of value is owned by global individuals in their homes. Add to this the value of property (including commercial real estate) in the hands of pension funds, endowments and similar and you have an additional US$20 trillion, for a total of US$95 trillion in owned properties. And so while fixed income is the largest global asset class, not far behind is the total value of global property.

1.4 State-Owned Enterprises

Harder still to value are state-owned enterprises as well as government assets overall, as these are by definition not publicly traded. However one can value these assets if they were to go public even if it is a form of an estimate, this forms an important proportion of global value, whether one is considering fossil fuel reserves owned by governments or the companies which represent such interests. It is important to ensure there is a layer of double counting prevention here as well, as some organizations have publicly listed shares representing a very small fraction of the overall value, so care needs to be taken to ensure this value is not counted twice, and that the public and private proportions are considered. Our best efforts to estimate this category is US$35 trillion, understanding that without such companies being privatized and traded, this figure will remain nebulous by definition, but one that needs to be considered in this equation without question.

1.5 Privately Owned Companies

Privately held companies, as well as earlier stage venture capital supporting such potential value creation, represents a rapidly growing segment of markets. They have been valued at US$3.8 trillion in June 2014,[7] and so given continued growth in this space we will use US$4 trillion as our present estimate. While efforts are under way to build social enterprise, such as B Corporations, impact investments and other forms of "social capital," these remain in the margin of error of this larger figure, although moves from public companies such as Natura and possibly Unilever are encouraging.

1.6 Infrastructure

Infrastructure is one of the more important, at times overlooked, asset classes. Representing a myriad of business activities, estimates for increased infrastructure investment show upwards of an additional US$50 to 75 trillion of new capital going into this segment by 2030,[8] with a gap being seen in funding for such investment, and a clear emerging need for this area of investment to help enable any necessary "green transition" as well.

Infrastructure is general thought to include highways, railways, ports, energy, water, airports and at time telecommunications infrastructure as well. In some ways, the sunk costs of global infrastructure are not nearly as important as the future directionality of new spend on this asset class. One estimate shows that over US$2 trillion of investment went into new global infrastructure from 2008-11, for one example.

Infrastructure which remains in use has only existed in these categories for the most part for the past 50 years, and given depreciation of longer term assets built some time ago, the value of many projects can be said to be fairly small and there is an understandable focus to maximize existing assets both from an efficiency savings and extending of use perspective. From 1992-2011, over US$30 trillion of investment went into infrastructure with China becoming the largest contributor, but of course infrastructure investments depreciate.[9] While McKinsey estimated existing infrastructure to be valued at US$50 trillion as of 2012, this does not appear to represent depreciated value, and so we will use US$35 trillion as a global proxy for the total present value of global existing infrastructure owned in portfolios and by governments.

1.7 Real Assets

Additional categories of owned assets include land, forests, gold and other tradable commodities, including fossil fuel projects that might sit outside of public companies or state-owned enterprises in private hands. The value of each subcategory of these commodities can be estimated, as can the total value of these in managed portfolios. We will use US$10 trillion as a first estimate, pending further granular analysis.

1.8 Cash

There are three pools of capital to look at in regards to cash: cash deposits in banks, cash in issuance including foreign exchange, and the value of money market funds. Cash deposits in banks were US$54 trillion in 2010,[10] foreign exchange reserves roughly US$12 trillion in 2013,[11] and the value of money market funds in the US roughly US$2.6 trillion,[12] adding to global cash in circulation. We will use US$75 trillion as an overall figure representing global cash.

Adding the figures above in Sections 1.1 through 1.8, we have US$420 trillion of value in the stock of global assets.

1.9 Other Nominal Value of Instruments

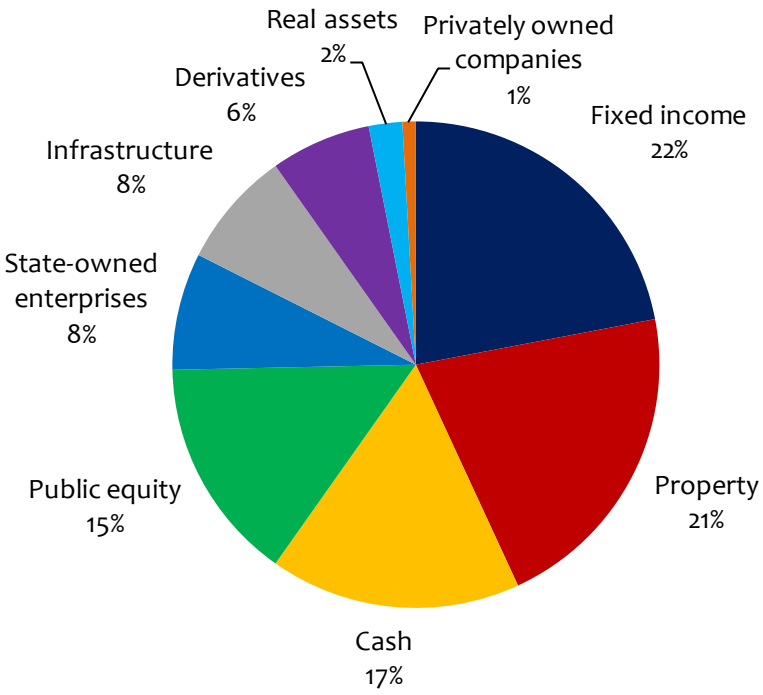
However, alas, our work is not done in estimating the value of all global assets as the Age of Securitization is also upon us, with derivatives and other forms of creative finance now forming an additional layer of "value". We will get more into this in the flows of commerce portion of this paper, but for now, we need to understand the basic value of derivatives from a stock perspective before we get into the critical question of the impact of such ongoing flows.

The BIS put the total value of derivatives outstanding at over US$1000 trillion in 2013, or a factor of something like almost three times the value of every other asset class combined (which on the face of it, should be something of a concern).[13] Given levels of leverage involved in establishing these derivatives (another category of concern), we can suggest US$50 trillion of value given a perhaps approximate average of 20 times leverage being deployed.[14] Another estimate sees US$12 trillion of cash tied up in derivatives markets.[15] More research is needed to pin down the underlying value of these instruments, quite a bit of which happens outside of public scrutiny. We add another US$30 trillion to our value of everything for now, making this total **US$450 trillion**.

1.10 Black Market Banking

Speaking of activities outside of public scrutiny, black market banking, lending and trading is a rising phenomenon. Dark pool trading in public equities is not a factor in the value of global assets from a stock perspective, however levels of underground banking and commerce do factor in and can be hard to quantify. The World Bank has made attempts to do just this.[16] Given that this represents in effect "illegitimate" activities, we will look at this area in the flows section, and not consider this in our value of global legitimate assets for this exercise.

Figure 1: The Value of Everything (US$450 trillion)



Institutional Investment – Half of the Value of Everything

We further see half of the Value of Everything, or US$225 trillion, being in the hands of institutional investors as being managed, actively or passively, or otherwise controlled by such institutions, a higher figure than has been previously considered.

This US$225 trillion includes a majority proportion of public companies (the largest 1000 public companies make up a significant proportion of global market capitalization) and are 70% institutionally owned, as high as 73% in 2010[17] up from a minority position a generation ago.[18]

Most fixed income (but not all) would also be in the hands of institutional investors. Also, managed portfolios of properties, as well as managed portfolios of infrastructure and real assets can be considered largely managed as would be the entirety of the notional value of derivatives. Cash is excluded as are "valuing nature" and other type of considerations.

[1] *Krosinsky, CapitalBridge, February 2008*
[2] *http://www.msci.com/resources/factsheets/index_fact_sheet/msci-world-index.pdf*
[3] *http://www.msci.com/resources/factsheets/index_fact_sheet/msci-emerging-markets-index-usd-net.pdf*
[4] *http://www.renaissancecapital.com/profile/showpdf.aspx?filename=2014GlobalReview*
[5] *http://www.ey.com/Publication/vwLUAssets/EY_-_Global_IPO_Trends_Q4_2013/$FILE/EY-Global-IPO-Trends-Q4-2013.pdf*
[6] *https://www.jpmorganfunds.com/blobcontent/750/453/1323371472246_MI-GTM-1Q2015_Mar_highres-37.png*
[7] *https://www.preqin.com/docs/reports/2015-Preqin-Global-Private-Equity-&-Venture-Capital-Report-Sample-Pages.pdf*
[8] *http://reports.weforum.org/green-investing-2013/required-infrastructure-needs/ and McKinsey Infrastructure Report 2013*
[9] *MGI Infrastructure Report, 2013*
[10] *http://www.mckinsey.com/~/media/MKinsey/dotcom/Insights%20and%20pubs/MGI/Research/Financial%20Markets/Mapping%20global%20capital%20markets%202011/MGI_Mapping_capital_markets_update_2011.ashx*
[11] *http://www.imf.org/external/pubs/ft/ar/2014/eng/pdf/a1.pdf*
[12] *http://www.ici.org/research/stats/mmf/mm_03_12_15*
[13] *http://www.bis.org/statistics/dt1920a.pdf*
[14] *Nguyen, Yale, 2014*
[15] *http://americablog.com/2013/03/the-worldwide-derivatives-market-could-be-over-1-2-quadrillion-in-notional-value.html*
[16] *http://siteresources.worldbank.org/PSGLP/Resources/UndergroundEconomyPark.pdf*
[17] *http://tcbblogs.org/governance/2010/11/23/report-institutional-investors-owning-more-of-larger-companies/*
[18] *http://www.prnewswire.com/news-releases/institutional-investor-stakes-in-largest-1000-corporations-have-peaked-signaling-the-rise-of-the-individual-investor-72661042.html*

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