A Curious Contract - Exploring the Nuances of Gold-Backed Pension Products

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This paper explores the possibility of introducing a pension product in India by monetising the existing stock of gold. The exercise draws inspiration from the RBI's KUB Rao Committee's Report which explicitly recommended exploring such an option. This study argues that in the context of India, gold and gold-backed pension products can be visualised as a culturally driven defined contribution plan and this arrangement operates under a tax-exempt-exempt (TEE) regime. Despite being a promising idea, full introduction of gold-backed pension product is not tenable because of the absence of a credible market-based benchmark for rate of interest on physical gold. However a gold-backed term annuity for a period not exceeding 10 years appears feasible in the coming years.

***Key words:** Gold, gold monetisation, pension annuity*

Introduction

India is the second largest importer of gold after China. India has the largest stock of gold, approximately 20,000-40,000 tonnes; collected through imports and accumulation over centuries. Gold enjoys a sacred place in Indian social customs and traditions. It is regarded as a sign of prosperity, an easy collateral for cash in times of adversity. Gold has also social security features, particularly for women in the form of *stri-dhana:* the inter-generational transfer of wealth to female member/s of the family following the marriage.

Households in India invest a sizable amount in gold (mostly in the form of jewellery and bars). The estimated stock of gold, valued at current dollar price of gold, ranges between $754 billion and $1557 billion. The official estimates of the gold investment (the annual flows) categorized as 'valuables' in national income account, 2011-12 base series, was 1.3% of the GDP in 2013-14. In terms of the share of gold in households' balance sheets, gold constitutes approximately 12% of

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net financial assets. The total estimated stock of gold constitute 39% of GDP at the lower limit and 81% of GDP at the upper limit.

A substantial portion of the savings locked in gold can be utilized for economic purposes (both consumption and production). Given this untapped potential, Union Budget 2015-16 in Paras 63-64 announced two gold monetization schemes to monetize the existing stocks of gold. The Budget speech mentioned two products : (i) 'Revamped Gold Deposit Scheme' and (ii) 'Sovereign Gold Bond Scheme' – both approved by the Cabinet on September 9, 2015 and subsequently rolled out by the Reserve Bank of India (RBI) in October 2015. The two schemes, taken together, respectively constitute a new architecture to monetize physical gold and to develop a paper market for gold in India.

The announcements in the Budget draws from RBI's K U B Rao Committee Report which recommended that "*[g]iven the complexities involved in the lure for gold in India, a holistic strategy that deploys a combination of demand reduction measures, supply management measures and measures to increase monetization of idle gold stocks needs to be put in place*". However, the Committee went further and also recommended introducing gold-backed pension product (GBPP). The Committee described this product as: *"[i]nstead of a one shot payback after 3-5 years, customers are given parts of the gold equivalent returns in the form of a monthly pension scheme over next 20-25 years. This would require an active back-end management of funds/ availing of annuity schemes by the banks with insurance companies.*" As the title of the paper suggests, the subject matter in this paper studies this suggestion of the K U B Rao Committee.

From here on the study proceeds in the following vein. We first trace the intellectual origins of this idea. We then survey the shortcomings of the pension policy adopted in India. It suffices to state that pension policy in India does not recognise gold as a legitimate asset for old-age security. A topic such as this requires a research methodology that is holistic in approach. This is because, firstly, there is no organized literature on gold, and secondly, once we accept gold as a pension asset it has wider implications in respect of monetary policy, financial sector policy and interpretation of several terms in numerous statutes. The research methodology section will introduce the Indian system of inquiry found in *Vedanta* and this method will be applied in a subsequent section to resolve question: Is gold a commodity or money? We then draw a detailed case for GBPP and gold as a pension asset and investigate the financial engineering of GBPP. We conclude this study by discussing some operational challenges in the light of current state of market for gold in India.

Intellectual Origins of the Idea

Mechanisms to monetize gold have been in vogue since the Gold Deposit Scheme, 1999. However, the idea of using household stock of gold for the purpose of financing old-age consumption was first made by R Vaidyanathan in 2004 (Vaidyanathan, 2004). He recommended the designing of an innovative instrument like the reverse mortgage for gold, which would facilitate an annuity stream of income to households holding gold or wanting to acquire gold. He reiterated this idea in his book *India UnInc* in 2014 and succeeded in making a compelling case that such a product must be explored by the RBI and the Ministry of Finance without delay.

Hence the recommendation by Rao (2013) was a continuation of an idea already available in literature. Rao's recommendations appear similar to Vaidyanathan's in that "*the customer shall surrender his gold to the bank on agreement to receive streams of monthly pension till his death. The bank can sell these ornaments or convert them into coins for resale.*" According to Rao, the "*scheme needs to be worked out explaining as to how it will generate returns adjusting inflation over 20-25 years. Therefore, introduction of this product needs closer examination of all relevant issues.*" However, there are differences between Vaidyanathan's and Rao's approaches which are addressed later in detail.

Missing Gold in India's Pension Policy

Although Vaidyanathan and Rao have supplied the conceptual groundwork for GBPP in India, it is necessary to revisit the existing pension policy because, firstly, the World Bank's (WB's) approach to pension reforms, upon which the Indian policy is based, has deficiencies, and secondly, the approach to policy making in India has undergone a shift in 2015.

The current pension policy germinated from the OASIS Report (Dave, 2000). The policy was influenced by the new pension reforms articulated by WB in its seminal report of 1994 (WB, 1994). Orestein (2005) while analyzing this new pension policy observed the following:

> The new pension reforms are part of a broader 'neoliberal' agenda of economic reform that has swept the world since being enacted in Chile and Britain in the 1970s and 1980s (Campbell and Pedersen, 2001). The new pension reforms are important for three reasons: (1) they radically alter the social contract and are thus highly controversial; (2) they represent a large proportion of the total economy; and (3) they have been implemented through a global policy process with the direct involvement of global policy actors. Everyone who expects to contribute to or benefit from a pension system should understand the nature of the new pension reforms, but few people do.

In a comprehensive review of the new pension policy, after their initiation in 1994 (See WB, 2006), the WB observed that:

1. The multi-pillar pension is a good benchmark but in no ways a blue print.
2. World Bank admitted that it acted too quickly to support the multi-pillar pension system *without examining alternate systems*.
3. The Bank realised that switching from PAYG to a fully-funded system may not be the best course where fiscal imbalance is caused by factors other than pension benefits, like lack of revenue reforms. Furthermore, "the Bank's preoccupation with fiscal sustainability tended to obscure the broader goal of pension policy, that is, to reduce poverty and improve retirement income adequacy *within fiscal constraints*" (WB, 2006, p xvii; *emphasis in original*).
4. Multi-pillar pension reforms have not improved old-age income security. Further it is difficult to determine whether funds will enjoy high rate of return in the long-run. With capital market volatility, the replacement rates will fluctuate across cohorts and will be sensitive to the exact year of retirement.
5. Bank's assessment of poverty did not relate the risk among the elderly to age structure, gender or location. Little empirical work was done on pension coverage and ways to increase it.
6. Bank questions its own assumption that pension reform will develop the financial markets because there is little evidence to support this claim.

A number of countries adopted the new pension reforms after 1994 (including India in 1999). In retrospect, there remains a considerable gap between what was intended and what was achieved. The experience in India after a decade was no different. Accordingly, one of the terms of reference of the '*Committee to Review Implementation of Informal Sector Pension*' (G N Bajpai, 2009) was to investigate the underlying causes for the tenuous beginning of National Pension Scheme (NPS). The Committee noted that:

> "Despite its unique features and the potential to address the issue of old-age income security in the informal sector, NPS remains unpopular. This may be due to the assumption that financial products, particularly pension products, do not need to be sold and that there exists a demand pull for such financial products. Nothing can be farther from the truth and the low level of financial penetration in India, despite the mandated government targets, is testimony to this axiom. From this basic flaw flows all the other infirmities in the product design and micro-structure."[1]

[1] *Gold is perhaps the most powerful counter example to this line of reasoning as it will be apparent in Section 6.*

A full-fledged review of the pension policy may be beyond the scope of this work, but WB's self-critique provides a useful reference point which the Committee ignored and failed to address in its report. It is therefore important to remember these gaps in the policy, as they stand today, in order to appreciate the proposal of the GBPP in the context of India and decide on a course correction by recognizing gold as a pension asset.

On January 1, 2015, the Government of India formally abolished the Planning Commission and replaced it with *Niti Aayog*. This new institution is entrusted with the task of providing independent inputs in tune with the present times and needs. Specifically :

> "… the institution must adhere to the tenet that *while incorporating positive influences from the world, no single model can be transplanted from outside into the Indian scenario.* We need to find our own strategy for growth. The new institution has to zero in on what will work in and for India. *It will be a Bharatiya approach to development."* [*Emphasis added*]

Hence, the very ideological basis of economic policy has undergone a shift – becoming more inward-looking than outward. By extension, there is a compelling case to reinterpret or reformulate the existing pension policy in the light of this ideological shift. Exploring the idea of a GBPP is the very extension of this thought process, i.e. looking for an old age income solution which is more acceptable without altering the existing social contracts. Furthermore, the Indian Financial Code lists 'Pension Fund Regulatory and Development Authority Act, 2013, (23 of 2013)' under "Schedule 4: Repeal of other laws". This further reinforces our reasoning to revisit the pension policy in the light of this possible development in the near future.[2]

Lastly, since the early times, the system of social security in India has relied on both state and joint-family support with larger emphasis given to the latter. Inter-generational transfer of resources within the family and through state arrangements were considered an essential element of social security to stabilize the society. Transfers within the family not only make bequest motives important in the design of pension products but also address the important gender-parity issues, particularly when such transfers involve gold. The NPS based on individual retirement accounts (IRA) by design cannot address inter-generational transfer of resources because they assume individual and not family as the basic economic unit thus constraining the generation by its own resources. Such an understanding of pension policy from an Indian perspective will favorably position GBPP as a possible remedy in India and as an '*alternate system*' for many Asian countries where gold is an important asset in the household portfolio.

[2] *Also see Section 414 of the Draft Financial Code.*

Research Methodology

The subject of GBPP is a difficult one to study because there is no precedence of such a financial product anywhere in the world. There is no organized academic literature on 'economics of gold' and much of the research on gold is in-house – often called as grey literature (Lucey, 2011). The limited but growing academic literature on gold is concentrated on three broad themes, namely: (i) financial aspects of gold (portfolio diversification, inflation hedging, and efficiency of gold markets), (ii) gold as currency and (iii) impact of gold mining on the environment (see O'Connor *et al*, 2015 for detailed survey).

As such, there is no mention of GBPP in academic literature although documented statistical properties of gold favour such an investigation. At best one hears of gold accumulation plans in IRA (such as Self-Invested Personal Pension in the UK[3]). But such an option in IRA is meant to diversify individual exposure across various asset classes and possibly to construct a hedge. However, gold accumulation in such IRAs have limited utility to finance old-age consumption unless there is an institutional mechanism to monetize the physical gold accumulated over the years into a pension annuity.

Another impediment to research includes legal position on the subject. For example, there is no legal recognition of a gold reverse mortgage (GRM) under the Indian laws. Section 2 of the Reverse Mortgage Scheme, 2008, defines "Reverse Mortgage" as mortgage of a capital asset by an eligible person against a loan obtained by him from an approved lending institution where "Capital asset" means 'a residential house property' which is located in India. Can gold be considered a capital asset? As a matter of fact, world over the academic literature on RM, developed using residential property as capital asset, has paid scant attention to the possibility of gold as capital asset in an RM transaction.

Hence, we are faced with <u>three</u> challenges: firstly, there is a need to define a GBPP. Secondly, to achieve this we have to resolve the binary: is gold money or a commodity so that under the present fiat currency system this confusion is reconciled and accommodated**.** Thirdly, having defined a GBPP, how does one fit the new idea into the existing scheme of things, namely the regulations, pension policy and larger economic policy? A holistic research methodology must somehow address all these challenges in one go, because a piecemeal approach would complicate future endeavors.

This paper utilizes an Indian technique of inquiry found in *Bheda-abheda Vedanta* – the Difference-Non-difference. The basic premise of *Vedanta* is that knowledge flows from what is known to what is unknown. Indian philosophy generally employs the principle of four-corner

[3] *See "The Royal Mint Gold for Pension Schemes" at https://www.royalmintbullion.com/Gold-For-Pensions (accessed on February 29, 2016).*

negation, that is: "S is neither P, nor not-P, nor both P and not-P, nor neither P nor not-P". This implies what is not known can be understood through the known by employing the principle of negation. *Bheda-abheda Vedanta* tries to reconcile the two extreme positions in *Vedanta* – the *Advaita*– which claims that the individual self is completely identical to *Brahman*, and the *Dvaita* that teaches the complete difference between the individual self and *Brahman* (which is a binary). In the traditions of *Bheda-abheda,* the difference and non-difference can be understood is two ways. Firstly, the non-difference is understood as identity while differences as negation of the identity (both help in defining the entity). Secondly, the two terms *bheda* and *abheda* can also be interpreted as separation and non-separation provided the observed difference and non-difference are separated in time. The advantage of the second interpretation is that one does not have to subordinate the difference over the non-difference or *vice versa* (reconciliation). *Vedantic* logic is not a strict binary logic but fuzzy. The observed entity (say gold) can fall in to more than one categories at the same time.

Translating this logic into the present case, by carefully understanding the difference and the non-difference, say between gold and fiat money, or, RM and GRM, one correctly defines what is under investigation. By resorting to the second interpretation of the difference and the non-difference one can also reconcile the contradictions such as: is gold commodity or money, because a strict binary requires subordinating one property over the other, thus fitting the GBPP with general scheme of things with minimum effort. Table 1 shows how gold can be viewed.

Table 1 : Four Views of Gold

	Commodity	Not Commodity
Money	III	II
Not Money	IV	I

Source : Author's Work

The present understanding about gold lies either in quadrant II or in quadrant IV. The next section will argue that a better position would be to view gold in quadrant III. This does not mean that positions II and IV are incorrect, but by moving to quadrant III greater possibilities, such as GBPP can be explored.

'Gold' : Commodity versus Money

Is gold a commodity or money? The *Report of the Committee on Fuller Capital Account Convertibility* (Tarapore, 2006) described gold as a surrogate for foreign exchange and a hybrid between a commodity and a financial asset. Ricardo in 1800s pointed out that gold is not only the measure of value but also the thing valued. Marx summarized that "gold and silver are not by nature money; money is by nature gold and silver." Pinney had explicitly clarified the duality of gold: gold is the ideal medium of exchange because of its acceptability, durability and portability. Lord Keynes described gold as 'barbaric relic', and, the dominant school of economics – the Neo-Classical – has often described gold as a dead investment. This School often resorts to a binary classification – commodity gold (for jewellery and industrial purposes) and monetary gold (held by central banks)[4].

The Austrian School of Economics however asserts that gold is money because it satisfies certain criteria at all times which are not satisfied by other commodities including fiat currencies. The criteria satisfied by gold include: divisibility, negotiability, transportability, durability, universal acceptance, low storage costs, easily recognizable, immunity against random replication and high stock-to-flow-ratio. As a result, gold can effectively serve as a medium of exchange, store of value, unit of account; has high liquidity because a buyer of gold can re-enter the gold market as a seller at some other time. Gold is a hedge against inflation, a hedge against vagaries of politics and a safe haven because the holder of physical gold does not assume any liability or counterparty risk. Also, in comparison to other assets, particularly a house, bequeathing gold is easier as it neither requires a sale deed nor its acquisition requires payment of stamp duty to secure ownership (Vaidyanathan, 2004).

The public perception of gold in the East and the West are also in striking contrast. The West's perception of gold is shaped by its traumatic past – social turmoil and wars fought over gold for centuries (Gurumurthy, 2013). This traumatic past needed to be erased from public memory which resulted in public property status of gold in the West. However, the West has not been able to change the perception of gold among households in Asia that continue to be net buyers of gold because they consider gold as a sign of prosperity (or *artha* in terms of Indian category). The net effect of this psychological conditioning is a complete alienation of gold as a pure private property in the West – a pure material asset (as against monetary asset) – in public memory that can be owned and traded at will (or *kama* in Indian category)[5].

Gold in the West has achieved the status of public property (in the form Central Bank gold holdings) as against its status as private property (in the form of household savings) in the East particularly in India, Japan, Korea and now actively promoted by China. Perplexingly, Lord Keynes also observed the difference in approach to gold in the East in his book, '*Indian Currency and Finance*' as "*[it] is a matter of comparative indifference… India, in her use of gold [use of informal] Gold-Exchange Standard … far from being anomalous, is in the forefront of monetary progress – heading towards the ideal currency of the future*" (Lehrman, 2013).

[4] *See Ming et al. (2016) for an excellent empirical analysis of the double nature of the price of gold.*

[5] *For a general discussion on this psychological conditioning of the Western psyche, see Malhotra (2011) Chapter on 'Order and Chaos'.*

Now, is gold a commodity or money? There is no 'Yes/No' answer to this question and unfortunately the present understanding of gold in India has been dictated by the Western perspective. However, the question can be answered if we accept the fuzzy logic framework, such as the *Vedantic* logic, described earlier.

From the above discussion, it is clear that gold has four dimensionalities: (a) financial asset/medium of exchange, (b) foreign exchange property, (c) commodity, and (d) psychological perceptions (material *vs*. monetary or *kama* vs. *artha*), which cannot be quantified but is inseparable in a cultural context. Now all these properties exist at any given point in time but which one of them takes a precedence depends upon the context and the use of gold. Gold jewelry sold by an artisan is commodity for the artisan but (may be) an asset for the purchaser. Again, if a jewelry item is surrendered to the bank for a gold loan, it becomes a financial asset for both. Black money is often parked in gold for the obvious reasons and is never considered a dead investment (Reddy, 1996). Table 2 maps the understanding of gold as money or commodity over cultural categories : *Artha* and *kama*.

Table 2 : Gold Mapped on Indian Categories

	***Artha* (Monetary)**	***Kama* (Material)**
Commodity	II	I
Money	III Central Bank Holdings	IV

Source : Author's Work

The western understanding of gold is confined to quadrant I and a tiny subset of quadrant III. However, the understanding of gold in India can fall anywhere from quadrant I to III. Thus, on a closer examination, one concludes that in the Indian cultural context, gold is more of a financial/monetary asset and this is the guiding principle in this paper. Nevertheless, both the properties–commodity and money–will always co-exist and the precedence is decided by the context.

Case for Gold as a Pension Asset

Any pension system or pension product must try to meet at least four objectives, *viz.*: (i) consumption smoothing, (ii) maintain the standard of living, (iii) purchasing power over time, and (iv) prevent old-age poverty (Barr and Diamond, 2008). A case for gold/GBPP therefore must be judged on the relevance of the economic properties of gold in fulfilling these four objectives. As discussed earlier, the academic and empirical literature on gold is confined to grey literature. The available literature exists only after 2007 when gold demand surged (Lucey, 2011) Table 3 gives a subset of this literature including some stylized conclusions. This survey is by no means exhaustive but is sufficient enough to drive home the point.

From the perspective of GBPP, the strand of available literature on portfolio-allocation problem and the analysis of gold markets are particularly relevant. The brief literature survey shows that gold is an effective portfolio diversifier, and can hedge both *ex ante* and *ex post* inflation which is the domestic purchasing power of currency. Gold is also an effective hedge against currency depreciation or the external purchasing power of currency. Gold is a hedge against equity on an average and a safe haven in extreme stock market conditions – albeit the safe haven property is short-lived. Thus, the economic properties of gold are promising in providing an effective social security during old age.

There can be a justified temptation to empirically verify these properties for gold in the Indian context. The present study does not attempt this exercise. There are three reasons for the same: firstly, demand for gold in India is determined by many factors and reducing it to just four or five categories camouflages the important role played by culture in household preferences for acquiring gold.[6] Secondly, by focusing too much on the properties, like inflation hedging and currency hedging, etc., we inadvertently subject our study through a Western prism thus vitiating the objectives of finding an Indian solution to an exclusively Indian problem. Moreover, Mishra & Mohan (2012), Rao (2013) do give some glimpses of empirical verification of these properties in their works. Thirdly, by merely not satisfying certain statistical propositions does not dilute the case for GBPP, given the size of savings parked in gold. (See Annexure 1 for a short summary on properties of the rupee-gold price).

Table 3 : Academic Research on Gold Markets

Research theme	Sub theme	Select Authors	Conclusions/Remarks
Portfolio allocation problem	Gold as diversifier	Lucey (2011), Erb and Harvey (2013)	Attraction of gold to portfolio is due to low/negative correlation and positive skewness of gold returns. Addition of gold in small amounts to the portfolio results in lowering of risk due to negative correlation with equity. The diversification is more pronounced for non-US based investor.

[6] *Surge in retail gold demand in China is a good example of how culture plays a vital role. Holding or purchase of gold was tightly controlled during Mao's period in China. Only recently did People's Bank of China (PBOC) encouraged retail holding of gold as it is a cheaper substitute to official gold holding by the Central Bank.*

Research theme	Sub theme	Select Authors	Conclusions/Remarks
Portfolio allocation problem	Gold as inflation hedge (ex post)	Erb and Harvey (2013), Long *et. al* (2013)	Gold acts as a hedge against both *ex ante* and *ex post* inflation but this result is a long run phenomenon. Furthermore, the hedging potential varies with characteristics of country chosen, time period chosen for the analysis and how the problem is framed. The hedging potential is strong in gold consuming countries like Turkey and Vietnam.
	Gold as inflation hedge (ex ante)	Blose (2010), Erb and Harvey (2013), Long et. al (2013)	
	Gold as hedge against currency depreciation	Capie *et al* (2005), Levin *et al*. (2006), Ozturk and Acikalin (2008, Erb and Harvey (2013)	Gold has served as a hedge against fluctuation in the foreign exchange value of the dollar; but results are dependent on somewhat unpredictable events. A study in Turkey however concludes the opposite. The price of gold is quoted in US dollars and gold is an inflation hedge for the US investor. However, holding gold is profitable for investors domiciled in countries whose currencies depreciate against the US dollar more than required to compensate for the difference between the countries and US inflation rate.
	Gold as safe haven	Baur and Lucey (2010), Mishra and Mohan (2012), Erb and Harvey (2013)	There can be many definitions of safe haven. Gold is a safe haven for stocks. However, gold is generally not a safe haven for bonds in US, UK and Germany. Such a study has not been done for other markets.
Gold as currency or monetary standard	The gold standard, bimetallism, and historical uses of the metal	Erb and Harvey (2013)	They investigate gold as medium of exchange.
Analysis of gold industry/ markets	Demand-supply analysis, cost of production, environmental impact, etc.	Levin *et al* (2006), Rao (2012), Hewitt *et al*. (2015), D'Souza (2015)	Financial gold market comprises the physical gold market and paper market comprising gold-backed products like ETF, futures, etc. The paper market is 92 times the size of physical market. Other outlets for gold consists of the gold-recycling market.

Source : Lucey (2011), Compilation by the author.

Besides the four favorable financial properties listed above, there are four additional reasons that make GBPP a proposal worth consideration. These four reasons are as follows:

- ***Coverage:*** Gold investment by households can be visualized as a culturally-driven Defined Contribution (DC) plan where small amounts of gold are purchased at various intervals during the year. Given the wide acceptability of gold, this DC plan has near universal coverage. A 2013 study by the RBI in Ernakulum district in Kerala with regard to ownership of gold observed that only 17% of the households had no gold. It was also noted that there was no significant difference in the average quantity – nearly three sovereigns (1 sovereign = 7.3 gms) – of gold owned by rural and urban households. This also indicates the significance that poor households attach to having gold, so as to fall back on during emergencies. Since gold purchase is culture-driven, the compliance with such a cultural-driven pension system will be mostly voluntary and will be the cheapest pension system requiring no state support. Besides, the cost of operation of such a pension system will also be low because there is no substantial fund management required during the accumulation phase.

- ***Gender Issues :*** Gold has been an efficient vehicle to transfer paternal wealth to a female child. The concept of *stridhana* was developed at a very early stage in the Hindu Laws of Succession to ensure gender parity in distribution of assets. This was because under the succession laws, the females did not have the status of a coparcener after marriage. Hence most of the gold that households hold is under the implicit ownership of women. The Supreme Court in *Krishna Bhatacharjee vs Sarathi Choudhury and Anr* [SC SLP (Crl) No. 10223 of 2014] has noted that a woman has inalienable rights over *stridhan* and she can claim it even after separation from her husband. In contrast, the western countries recognized female ownership of financial assets only in 1970. Gender parity issues are still unresolved in pension systems due to the wage disparity between male and female workers and the longer life span of females than males. Since gold is mostly owned by females, they also constitute the largest group of survivors in the higher age category (as per Census 2011, for Age >60 1053 female per 1000 males and for Age > 80 1098 females per 1000 males), there is a case to draw for annuities based on gold to preserve the living standards in advanced ages for females.

- ***Taxation:*** Under the present taxation laws, savings in gold are not tax deductible. On the contrary, gold purchases are subject to the GST rate of 3% (VAT and customs duty earlier) by the government. However, the interest earned on gold deposit under Revamped Gold Deposit Scheme, 2015, is not subjected to income tax. Hence, under the present legal dispensation, gold savings (when viewed on an end-to-end basis) are operating under tax-exempt-exempt

(TEE) structure, which is in contrast to the more prevalent EEE or EET structure for other savings instruments. However, if we assume that utility function is weakly separable in consumption and leisure (which is reasonable for our study), the behavioral impact of TEE and EET are nearly identical. Thus, in theory there will be no impact on labour supply if gold pension scheme is put into operation.[7]

- ***Diversification of Income Stream:*** The objective of any pension system is not limited to just ensuring consumption smoothing and preserving purchasing power. An added feature of a well-designed pension system can be consumption smoothing across different states – good and bad. Gold being a safe haven naturally offers such a feature. Thus by allowing a pensioner to draw asset income by monetizing gold, a pension system can ensure that pension income is diversified across various asset classes in the retirement phase, thus smoothening his consumption across low probability high-risk states. The study of Manson et al (2011) of asset flows across generations argues that the elderly in Asia rely less on transfers and dis-saving and more on asset incomes to finance consumption. Thus monetization of gold that generates asset income flows complements the existing efforts on financing old-age consumption.

Financial Engineering of Gold-Backed Pension Products

The proposal for a GBPP has been advocated by two experts, albeit in different contexts. As we shall see later in this section, depending upon how we design the final annuity plan and what operational definition of gold we adopt, there are four ways in which we can visualize a GBPP.

As per Vaidyanathan, an innovative instrument, like the reverse mortgage for gold, which would facilitate an annuity stream of income to households holding gold or wanting to acquire gold, should be considered. He particularly emphasized on a tripartite structure involving the individual, the bank and the life insurance company to which the bank extends a lump-sum loan against gold, which is then used to purchase life annuity. In this formulation of GRM, the capital asset 'house' is substituted by 'gold'.

However, as per Rao's proposal, households shall deposit their idle gold with banks and instead of a one-time payback after 3-5 years, customers are given parts of the gold equivalent returns in the form of a monthly-pension scheme over next 20-25 years. He also emphasized an active back-end management of funds/availing of annuity schemes by the banks with insurance companies. In this proposal, the annuity resembles one paid in Gold Deposit Scheme, i.e. in grams of gold. Furthermore Rao's proposal is suggesting a clean gold sale. Both Vaidyanathan and Rao agree on

[7] *As a corollary, gold accumulation requires supply of human labour. Accordingly, gold demand is positively correlated to the real per capita income (Kannan and Dhal, (2008).*

some sort of bank-insurance company-backend arrangement and implicitly emphasize on gold as commodity.

Therefore, depending upon whether the pension annuity is plain vanilla, rupee annuity or denominated in grams of gold, and, whether gold is used as a medium of purchase of annuity or as commodity under RM, we can have four possibilities as given in Table 4 below.

Table 4 : Possible types of Gold-Backed Pension Products

	Annuity Type	
(Idea of gold)	**Plain vanilla rupee**	**Grams of gold**
Clean purchase *(money)*	Type I	Type II
Reverse mortgage *(Commodity and currency)*	Type III	Type IV

Source : Author's own work

It is evident from Table 4 that Types I & II GBPP assume gold as money while Type III assumes gold more as a physical asset (commodity) with equity value, and, Type IV assumes gold as pure currency and commodity. Furthermore, except for Type I GBPP, annuities from the remaining three are exempted from taxation under present laws. The interest calculated in grams is typically disbursed in equivalent rupee value, thus exposing the seller of annuity to both gold price risk and exchange rate risk.

***A formal definition*:** Based on the discussion so far, it is possible to loosely define the term GBPP. 'A GBPP is a financial contract between the holder of physical gold and a bank or an insurance company or any other authorized financial institution to exchange physical gold for stream of payments to finance old-age consumption. The stream of payments thus exchanged for gold, may or may not be linked to physical quantity of gold exchanged'.

The equation of value for each of the four possible types of gold pension product are discussed as under:

<u>Notations</u> : XAu (t) = dollar price of gold per 10 grams at time t; G = grams of gold; E (t) = rupee-dollar exchange rate at time t; r = rate of interest at time t; g=rate of interest on physical gold at time t; and ${}_tP_{60}$ is the survival probability; CF is cash flows; A= cash flows measured in grams = G*a where $0<a<1$ and (G)BAL=(Gold) loan balance.

Type I : $G * XAu_0 * E_0 = \sum_{i=1}^{T} CF_i * (1+r)^{-i} * {}_iP_{60}$

Type II: $G = \sum_{i=1}^{T} A_i * (1+g)^{-i} * {}_iP_{60}$

Type III: $\sum_{i=1}^{T} [BAL(i) - XAu(i)]^+ * {}_iq_{60} * (1+r)^{-i} = \sum_{i=1}^{T} CF_i * {}_iP_{60} * (1+r)^{-i}$

Type IV: $\sum_{i=1}^{T} [GBAL(i) - G_0]^+ * {}_iq_{60} * (1+g)^{-i} = \sum_{i=1}^{T} A_i * {}_iP_{60} * (1+g)^{-i}$

Operational Challenges

Up till now this paper has looked into GBPP purely from a theoretical perspective (finance and actuarial). However, a proposal like this is bound to face serious operational challenges. This section highlights some of these challenges.

Definition issues : A careful reading of both the Vaidyanathan's and Rao's suggestions favours a lump-sum amount against gold (commodity view of gold) and a back-end arrangement with an insurance company to sell a life annuity using the lump-sum amount. The only difference being: Vaidyanathan favors an RM-type arrangement, while an RM-like arrangement is complicated and a financial institution will have to bear the cross over risk associated with an RM. Nevertheless, GRM materially differs from the standard RM and has certain advantages as summarized in Table 5.

Table 5 : Qualitative Comparison between RM and GRM

Risks in Home RM	Risks in GRM
Length of residency	NA
Interest rate risk	Interest rate risk
General/specific home appreciation	General appreciation in gold prices
Expense risk	Expense risk
Maintenance risk	NA
NA	Exchange rate risk
Mortality	Mortality

Source : Author's work. NA=Not applicable

As noted earlier, there are considerable advantages with gold when bequest motives are attached to it. However, the choice of using RM in old age is also affected by composition of assets in total savings, social conditions, like strength of the marriage bond, size of the household and the perceptions of the young generation on inheritance practices (see Yoo and Koo, 2008). In India marriage and the family system continue to be strong (James & Srinivasan, 2015), which also explains why parting with housing assets under RM have not found favour in India. The same preference may or may not act as a limiting factor in vitalizing GRM market.[8]

The current lack of interest in gold product should not act as a deterrent and there is a need to popularize the same in future. Longevity gains in the future will increase the dependency ratio (measured as ratio of financial flows from young to old, divided by the total average household earnings), thus increasing the importance of cheaper mechanism to draw down on assets. GRM appears superior to standard RM in this respect as gold is easier to acquire than a house. A GRM can be modified to address bequest motives by incorporating a redemption option. Such an option will be less expensive compared to a similar option on house given low transaction cost associated with disposal of gold.

Valuation of GBPP : Absence of interest rate or term structure of interest rate for gold can seriously hinder the valuation of a pension product based on gold. Since gold has no stream of income like a dividend or coupon rate, ascertaining the price is also difficult. Despite all constraints, the world market for gold is one of the most liquid markets. The Indian market is better positioned in respect of many advanced markets, because firstly, the physical market for gold dominates over the paper market in price determination. Secondly, with the launch of the 'Revamped Gold Deposit Scheme' (RGDS) and the 'Sovereign Gold Bond Scheme' (SGBS), a market/alternate benchmark for rate of interest on physical gold may develop as both schemes gain popularity over time.

Under the SGBS rate of interest on bond with the face value in grams of gold will be set taking into account the domestic and international market conditions. The rate could be a floating or a fixed rate, and, the tenor of the bond could be for a minimum of 5 to 7 years. Under the RGDS, the amount of interest rate payable for deposits, made for a short-term (1-3 year) period would be decided by banks on the basis of the prevailing international lease rates, other costs, market conditions, etc., and will be denominated in grams of gold. For the medium (5-7 year) and long-term deposits (12-15 years), the rate of interest (and fees to be paid to the bank for their services) will be decided by the government in consultation with the RBI from time to time. Only for short-term deposits, the customer will have the option of redemption, for the principal deposit and the interest earned, either in cash or in gold, which will have to be exercised at the time of making the deposit. For medium and long-term deposits, redemption will be only in cash, in equivalent rupees of the weight of the deposited gold at the prices prevailing at the time of redemption.

[8] *Reluctance of households to part with gold is confirmed by the lukewarm response to Gold Deposit Scheme, 1999.*

***Matching Assets*: In this paper GBPP has been defined from the perspective of liability or benefits angle. Thus the discussion so far has ignored the asset angle. As Rao correctly pointed out, the "*scheme needs to be worked out explaining as to how it will generate returns adjusting inflation over 20-25 years.*" Deployment of mobilized gold to achieve sufficient returns is particularly relevant if the promised annuity is disbursed in grams of gold. As things stand today, the issuances under SGBS can be an efficient matching asset; but the tenure of 5-7 years is a limitation. The RGDS does envisage longer tenures – up to 15 years. Hence, under the present state of market infrastructure and lack of experience in GBPP, the tenures beyond 15 years look untenable. However, limited experiments in offering term annuity of not beyond 10 years can be tried out by the insurance sector. Banks typically lend some amount of gold mobilized under gold deposits to jewelers for a tenor of maximum 180 days. Insurance companies may also be permitted to extend such short-term loans if they are able to generate sufficient mobilization. The insurance regulator will also have to permit insurance companies to take exposure to gold as an asset class.

***Legal Issues*:** Harmonizing/amending provisions across various laws will be a mammoth task before rolling out GBPP. This harmonizing must be done to minimize regulatory overlaps, provide level playing field for possible entrants from various segments of the financial sector and customer protection. Gold in India is treated at par with agricultural commodity, thus, it comes under the State List which is not in sync with the understanding of gold as monetary asset. The implementation of GBPP will require an appropriate constitutional amendment empowering the central government to make appropriate laws. Some of the other laws that may require amendment include: laws of inheritance, Stamp Duty Act, Insurance Act, Transfer of Property Act, Income Tax Act, Moneylenders' Act, RBI Act, etc. (Vaidyanathan, 2014 : p. 204).

***Convergence of Gold Fix*:** The present gold monetization approach relies on two different fixes to monetize gold. A gold fix is the conversion ratio to convert a given quantity of gold into an equivalent rupee or dollar. The SGBS is using a fix rate based on simple average of closing price for gold of .999 purity standard of the previous week announced by the India Bullion and Jewellers Association Ltd. However, in the case of RGDS, the monetization is based on .995 purity standard, and, the fix mandated by the RBI is the London AM fix for Gold /US$ rate with the Rupee-US dollar reference rate announced by the RBI on the relevant day. Thus, the SGBS is tracing the on-shore price of gold while the RGDS is tracing the London price which is generally lower than the domestic price. Although there is a complete pass-through of changes in international prices on to the domestic prices, such choice of different fixes only hampers development of unified gold market from GBPP point of view. Therefore, the recent proposal to have a physical gold trading exchange can bring the much-needed transparency and uniformity in gold fix required for monetization of physical gold.

Conclusions and the Way Forward

This paper discusses and tries to refine the concept of GBPP proposed by Vaidyanathan and Rao. The paper began by elaborating the context in which this proposal was made and the recent developments in gold monetization schemes, which can create an enabling ecosystem for GBPP. This study concludes that GBPP can be a welfare enhancing scheme, given the presence of a rudimentary gold monetization infrastructure in India. GBPP can provide an alternate solution to enhance pension coverage in India without altering the existing social contracts, thus making them more acceptable to save substantial costs. However, at this juncture, full introduction of GBPP with long tenure looks untenable because of the absence of a credible market-based benchmark for the rate of interest to be paid on physical gold. However, if the intended objectives of gold monetization scheme are eventually met, a gold-backed term annuity for a period not exceeding 10 year appears feasible in the coming years.

This study is by no means fully comprehensive or exhaustive; a number of serious investigations are needed to further crystallize the idea. Some of the areas of further research include reserving of GBPP, developing a robust stochastic scenario generator to study the nuances of the scheme against the risk-return framework, calculating the capital requirement for such products, studying the various laws and harmonizing them to place GBPP on a sound legal footing. However, such a detailed effort will require systematic study on the topic of precious metals by financial institutions, both banks and insurance companies, because both deal in contracts in fiat currency and are not accustomed to dealing with the subtleties of precious metals (D'Souza, 2015).

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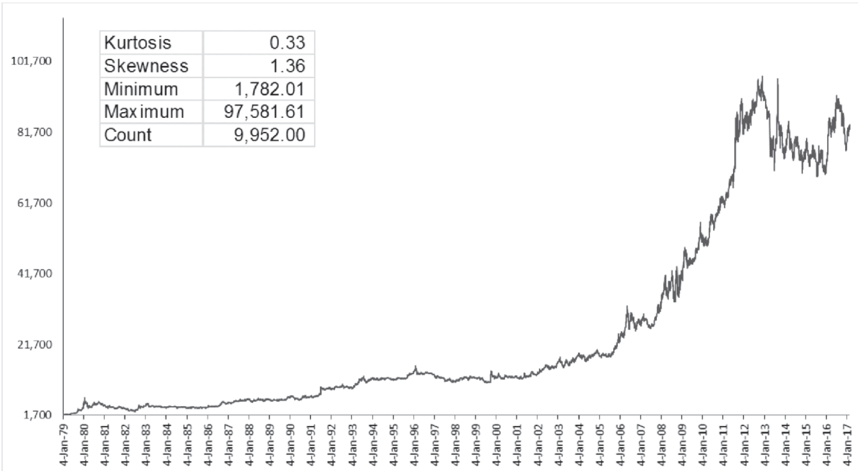
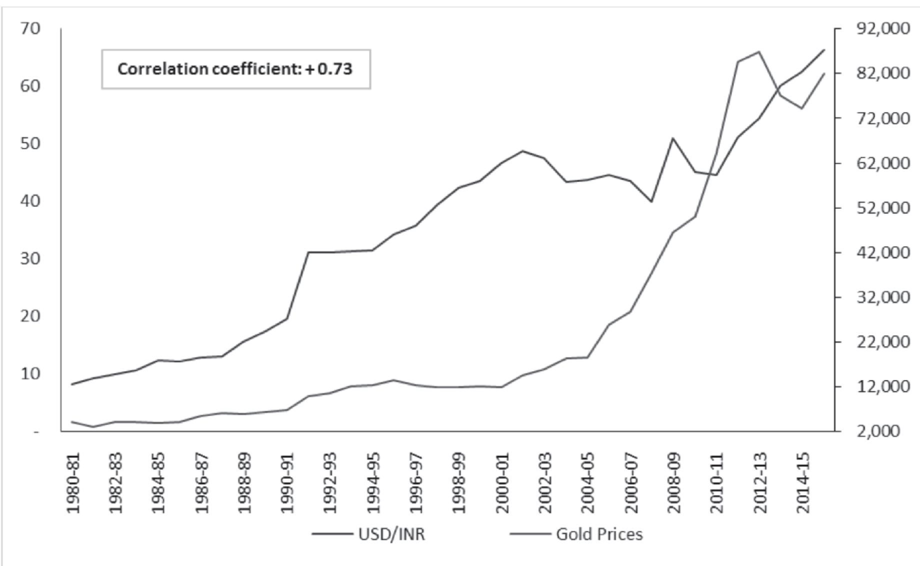
Annexure 1

Graph 1 : Daily Price of Gold in Rupees per Troy Ounce



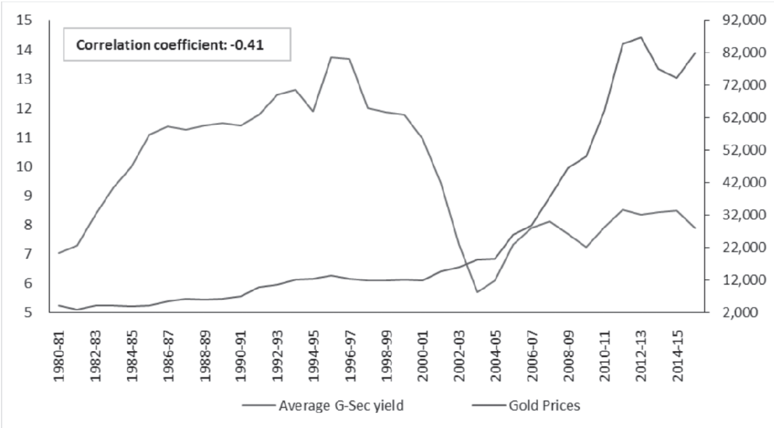
Source: World Gold Council. Sample period: Jan 3, 1979 to Feb 24, 2017. 1 troy ounce = 31.1035 grams.

Graph 2: Co-movement between Rupee Dollar Exchange Rate and Gold Price Rupee per Troy Ounce



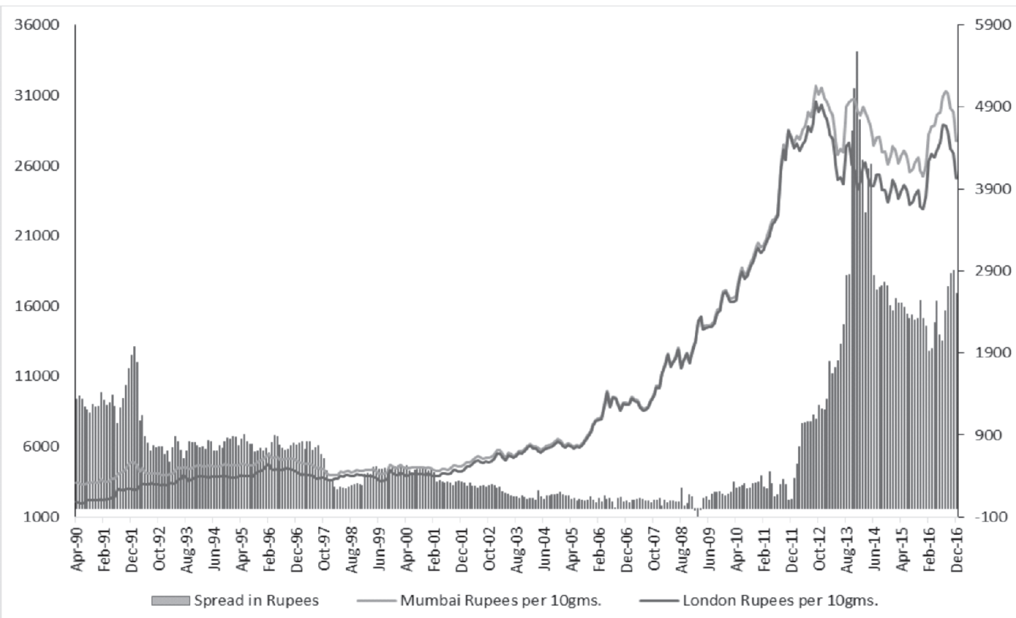
Source : World Gold Council, Reserve Bank of India. Sample period: Financial Years : 1978-79 to 2014-16.
Note: Price of gold and exchange rate as observed at year end.

Graph 3: Co-movement between Average G-sec Yield and Gold Price Rupees per Troy Ounce



Source: World Gold Council, Reserve Bank of India. Sample period: Financial Years : 1978-79 to 2014-16.
Note : Price of gold observed at year end. Average G-sec yield chosen because of longest history.

Chart 4: Variation in monthly Onshore and Offshore Price of Gold



Source : Reserve Bank of India. Sample period: Financial Year Apr- to Dec-16, 1990.