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Liability driven investment and pension fund exposure to emerging markets: A Minskyan analysis

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Abstract

This paper explores the determinants and implications of the growing allocation of insurance companies and pension funds (ICPF) to emerging markets (EM). The key contention put forward is that liabilities are at the core of the portfolio choice of ICPF, and that this has important consequences for the stability of asset demand. The paper supports this contention with a theoretical framework based on Hyman Minsky, and the results from 22 semi-structured interviews with European ICPF executives, investment consultants, and asset managers. It shows that the rising ICPF demand for EM assets has to be analysed in the context of the pressures resulting from structural funding deficits and low yields. EM assets are sought as part of the sector's strategy to increase returns and, given their subordinate integration into a spatially uneven international monetary and financial system, remain not suited to directly meet ICPF's liabilities. This causes ICPF' demand for these assets to be volatile and independent of conditions in these countries, reproducing EM' monetary and financial subordination. By stressing the structural financial (in)stability implications ICPF liabilities have for EM asset demand, the paper contributes to the literature on ICPF investments in EM, and bridges the gap between those which have noted the importance of liability conditions for ICPF and the literature pointing to the destabilising impact of ICPF due to behavioural and agency issues. Moreover, by basing itself on a Minskyan theoretical framework, it responds to recent calls for a more systematic incorporation of heterodox economic thought into financial geography.

Keywords: Institutional investors, liability-driven investment, emerging markets, Minsky, pension funds

Introduction

The increased investment of insurance companies and pension funds (henceforth ICPF) from advanced economies (AE) into emerging markets (EM) has been one of the most salient changes in international finance over recent years (IMF, 2014; Moore et al., 2016). As of 2016, ICPF owned about 54 trillions of US dollars, about 70% of global GDP or 32% of total world bonds and stocks outstanding. A growing proportion being invested in EM assets. While this

proportion is still small within ICPF portfolio, it is sizeable for EM, which has sparked the attention of a growing literature discussing the implications it might have for financial stability. Whereas some see it as a positive development, as ICPF help to modernise and stabilize financial markets (Clark, 2005; Clark and Hebb, 2005; Hardie, 2007; Hebb and Wójcik, 2005), others have shown that this might not always be the case due to the existence of herding, benchmark trading, and the large size of these investors relative to EM domestic markets (Arslanalp and Tsuda, 2015; IMF, 2014; Langley, 2004; Liang, 2011). Indeed, the IMF (2014, 2015) has shown in his Global Financial Stability Reports that ICPF may be less sensitive to short-term volatility, but respond sharply to financial shocks.

We contribute to this literature by highlighting a so far neglected determinant of ICPF behaviour: their liability structure and the need to 'match' this liability structure with their asset allocations; that is ICPF need to ensure that the assets they hold generate a cash flow which is both high enough and similar in its dynamics to their existing liability structure to be able to service current and future cash commitments. Based on a Minskyan theoretical framework, we make two key arguments: first, IFCP investments in EM have been fundamentally shaped by recent changes in their liability structures in the form of structural funding deficits; second, because EM assets are not fit for matching ICPF liabilities they are sought as part of a 'return-seeking' investment strategy, that is high risk/high return assets kept for portfolio growth purposes, which has negative implications for the stability of ICPF asset demand. Whereas the existing literature has largely focused on behavioural and agency issues, such as herding and benchmark trading (IMF, 2014, 2015), we highlight how internal *structural* problems of ICPF may destabilise financial markets in EMs.

By highlighting the structural implications ICPF balance sheet structures have for financial (in)stability, and drawing its analysis on a Minskyan theoretical framework, the paper makes several contributions to the literature on ICPF, pension fund capitalism and financial geography more generally.

First, it bridges those contributions in the pension fund capitalism literature which have highlighted the role of liability mismatches and funding gaps in the evolving ICPF governance (Clark and Monk, 2006; Clark and Urwin, 2008; Monk, 2009), with those that have pointed to the financial stability implications of the rise of ICPF (Blackburn, 1999; Engelen, 2003; Langley, 2004; Whalen, 2001). Based on 22 in-depth semi-structured interviews with European ICPF executives, managers, investment consultants, and asset managers, it shows the systematic and systemic role liability-driven-investment (LDI)[i] nowadays plays for ICPF' portfolio decisions. The central contention is that in the era of LDI, ICPF' asset demand becomes to fundamentally depend on the conditions of their liabilities and the contribution that these assets make in meeting them. This, in turn, has important consequences for the nature of ICPF's demand for different asset classes and hence financial stability.

Second, by highlighting the need of ICPF to match their liabilities, the paper reaffirms the importance of space and place in shaping cross-border capital flows (Christophers et al., 2017; Clark, 2005; Corbridge et al., 1994; Dymski, 1999; French et al., 2011; Leyshon and Thrift, 1997). Whereas financial flows have become increasingly fluid and seemingly oblivious of

geographical borders, the liabilities which ICPF need to meet are deeply embedded in specific geographies and the institutional, regulatory and macroeconomic (henceforth IRM) characteristics circumscribed by them. This is particularly the case for ICPF liabilities which are constituted by the insurance and pension promises to a nation's citizens. Whilst strongly tied to specific locations, in the era of financialization and privatized pension systems more and more individuals have been drawn in the remit of private financial markets. In this vein, (Bryan et al., 2017) argue that "….we can start to see the reconstruction of a nationality in finance not in term of the axiomatic innate nationality of capital or financial institutions, but in the development of a financialized citizenry, which anchors the nationally dominated financial claims circulating globally (p. 59)".

Third, the paper's emphasis on the 'homogenising' and destabilising impact of ICPF stemming from their liability structure, points to another channel through which the structural imperialism of modern finance exercises itself (Gowan, 1999; Harvey, 2003; Meeteren and Bassens, 2016; Panitch and Gindin, 2005) and reproduces the uneven development of today's financial capitalism (Bond, 1998; Corbridge et al., 1994; Harvey, 2006; Leyshon and Thrift, 1997; Pike and Pollard, 2010; Sokol, 2017). Financial geographers have long pointed at the uneven geographical distribution of global financial activities which tend to concentrate in AE and there particularly in financial centres, such as New York and London (Clark, 2002; Clark and Monk, 2017; Wójcik, 2013). This is also the case for the liabilities of ICPF which collect the savings of AE workers and frequently outsource them for management to asset management companies (most of them located in the financial centres mentioned above) (Clark, 2005; Clark and Monk, 2017).

This has two implications for our argument. First, financial conditions in AE (and the financial centres herein) will fundamentally shape asset demand in other places, largely independent of the specific conditions in these localities. Though this is particularly evident during crisis episodes, this paper shows that ICPF demand for an entire asset class, EM, can be understood as a result of their changing liability conditions. Second, though a far more complex channel, the need to match these AE ICPF liabilities puts pressures on the assets 'produced' elsewhere to mirror the characteristics of these liabilities (Bassens, 2012; Gowan, 1999; Hebb and Wójcik, 2005) . Failure to do so will be priced as additional 'risk', reflected in the need to generate higher cash flows, or can lead to the exclusion from the ICPF investable set. [ii]

Whereas these risks are inherent to cross-border capital flows, this paper argues that EM assets are particularly unsuited for matching AE ICPF liabilities. One the one hand, this is due to their historically very distinct IRM conditions. More importantly though for our purposes, it is the immediate result of EM' subordinate position in the spatially uneven international financial and monetary system, which exposes them to relatively lower market liquidity, higher credit and currency risk, and heightened financial volatility and external vulnerability; all of which makes their assets not well suited for liability-matching. This, in line with the Minskyan framework put forward, necessitates them to offer higher cash flows and means they are only bought for return-seeking purposes. More than that, the instabilities created by being part of this return-seeking portfolio reproduce EM' subordinate international

financial and monetary position (Gowan, 1999) and the uneven geographic development it entails (Kaltenbrunner and Painceira, 2018).

Finally, by basing our analysis on a Minskyan theoretical framework we respond to Dymski's (2017a, 2017b) recent call for a more systematic analysis of financial instability using Minsky's work outside heterodox economics, in particular economic geography. In his work, Minsky highlighted the crucial role of liability conditions for economic actors' portfolio decisions and the implications the dynamic mismatch between the two has for the stability of financial capitalism (Minsky, 1975, 1986). Moreover, Minsky's emphasis on which assets are bought and how they have been financed, represents an inherently relational view of finance, which highlights the importance of both time and space for understanding financial decision making and helps to theorize the 'spatial relations of finance' (Barnes and Christophers, 2018). These encompass not only the instability arising from 'mismatches' between two places, but also the power one place, predominantly the one where 'financing' occurs and hence liabilities are concentrated, can have over another.[iii]

The paper is structured as follows. Section 2 reviews the literature on pension fund capitalism, with a particular emphasis on the role of liability management and its implications for financial stability. Section 3 discusses the nature and implications of LDI within a Minskyan framework. Section 4 shows the importance of LDI for recent changes in ICPF behaviour towards EM, whereas section 5 discusses their implications within the uneven geography of international monetary and financial relations. Section 6 concludes.

Pension fund capitalism and EM

The rise of ICPF as shareholders and key economic agents represents a crucial structural shift in Western capitalism (variously termed 'grey'/pension fund/money manager capitalism) (Blackburn, 1999; Clark, 2000; Toporowski, 2000; Whalen, 2001). For some this shift represents a beneficial development as ICPF compensate for the falling financial capacity of nation states in the face of changing demographics and promote efficient corporate governance (Clark, 2000, 2001, 2003; Clark and Hebb, 2005). As part of this process ICPF are also expected to invest in EM, which is considered necessary to solve Western countries' retirement crises through the generation of higher returns (Clark, 2001; Clark and Monk, 2017). From the perspective of the recipient countries, the international diversification of ICPF is seen to contribute to the transfer of savings, better governance standards, and spread of economic and financial development (Clark, 2005; Clark and Hebb, 2005; Hebb and Wójcik, 2005). Moreover, the higher share of long-term investors in international capital flows should act stabilizing due to their longer time horizon, making them more considerate of domestic economic fundamentals and less sensitive to international market conditions (Hardie, 2007).

Others have been more sceptical of the alleged benefits of ICPF which are seen to promote speculative behaviour and herding which destabilize the financial system and generate boom-bust cycles (Engelen, 2003; Langley, 2004; Toporowski, 2000). Moreover, ICPF are thought to advance 'shareholder value', which prioritises short-term returns at the

expense of long-run productive investment and employment (Blackburn, 1999; Engelen, 2003; Langley, 2008; Minns, 1996; Toporowski, 2000; Whalen, 2001). When it comes to investing in EM, ICPF are seen to impose constraints, particularly through their holding of EM public debts, "with knock-on effects for national exchange rate and interest rate policies" (Minns, 1996: 48). The standardisation of policies across the globe that is promoted through ICPF investment is seen as a negative and politicised strategy that only contributes to reinforcing the neoliberal agenda (Soederberg, 2003). With regards to the stability of international capital flows, this literature, in line with the general argument above, points to the risk of exacerbated price movements and boom-bust cycles due to the presence of herding, benchmark following, positive-feedback trading and contagion (Arslanalp and Tsuda, 2015; Langley, 2004; Liang, 2011; Toporowski, 2000).

Although this latter literature has pointed to the potentially destabilising implications of ICPF investment in EM, its focus has been on the behavioural and agency issues that may result in unstable investment decisions, rather than the structural conditions underlying ICPF portfolio decisions. It misses the crucial importance of liabilities in this process. For example, (Engelen, 2003: 1364) argues that "pension funds have four objectives, that is, (1) the minimisation of risks, (2) the maximisation of returns, (3) ensuring liquidity, and (4) the minimisation of costs". However, he does not appreciate the importance of the structure and size of liabilities in shaping these four parameters.

The importance of liabilities for ICPF portfolio decisions has first been acknowledged in the early 2000s (Clark, 2003; Clark and Monk, 2006, 2007). At the turn of the century, with the collapse of the 'dot.com' bubble and the subsequent expansionary monetary policy, equity prices and bond yields declined dramatically. ICPF were hit heavily by a sudden fall in asset values, given their large equity investments, and a reduction of long-term returns and interest rates, a combination defined as a 'perfect storm' for ICPF. As a result, for the first time in history, ICPF saw the value of their assets fall below the value of their liabilities, which created a funding deficit and put the sustainability of pension and insurance entitlements into question.

Some authors located these problems in inadequate governance mechanisms, which meant that trustees were not fully aware of the financial risks associated with their investment strategies (Monk, 2009). The inherited governance structure of ICPF was deemed to be inadequate to face the reality of globalised capitalism, dominated by complex financial investments (Clark and Monk, 2006). One element of this lack of ICPF oversight was the failure to properly account for their changing liabilities, in particular with regards to the appropriate use of discount rates to calculate their value as the discounted future cash obligations (Clark and Monk, 2006)[iv]. However, whilst acknowledging the crucial role ICPF' liability structure had in contributing to the 'perfect storm', this literature has not investigated further the systematic (and systemic) implications that liabilities nowadays have for ICPF' asset allocation strategies and consequently financial stability[v]. This paper fills this gap by bridging the literature focussing on the importance of liabilities, with that on the financial stability implications of ICPF investment. This, as we show in the next sections, follows naturally in a Minskyan framework.

Liability Driven Investment and ICPF Behaviour from a Minskyan perspective

Hurt by the substantial funding deficits during the 'perfect storm', ICPF now put liabilities explicitly at the core of their operations.[vi] As highlighted by Franzen (2010: 26): "In the traditional world, investment was mainly an exercise in optimising risk-adjusted returns conducted by the pension fund manager with often a rather loose view on liabilities". Nowadays, according to the Bank for International Settlements, the central concern for institutional investors is not the performance against benchmarks or peers, "but rather how assets perform against the size and time profile of liabilities." (BIS, 2011: 10-11). Similarly, an asset manager of a pension fund fiduciary company noted:

"[liabilities] are very important because that's almost like a benchmark you need to beat" (Interviewee 10, 5.2.2015).

This overarching investment framework has come to be known as Liability Driven Investment (LDI). The liabilities of ICPF are calculated as the present value of future cash commitments, i.e. pensions and insurance bonuses, which are discounted with interest rates on high-quality assets such as low-risk bonds or interest rate swaps. This implies that, unlike other institutions such as banks, ICPF have a long-term, fairly predictable liability structure. Ideally, ICPF would insure themselves fully by investing in assets whose cash inflows precisely match these outflows. However, as these assets may not be readily available or affordable, ICPF face the dilemma of choosing between assets with secure and predictable but low cash inflows, and assets with uncertain but potentially high cash inflows. Under LDI, the solution to this dilemma is based on a clear distinction between two portfolios: a liability-matching (or protection) and a return-seeking (or growth) portfolio. "In this structure, the hedging objective and the return goal are managed by (a) how much of the total portfolio is dedicated to each portfolio and (b) the way in which the two portfolios are structured" (Collie and Osborn, 2011: 2-3).

As both a pension fund investment adviser and pension fiduciary company manager pointed out:

"So, pension schemes typically split their portfolios into two parts: they got the … growth part, …and then the other part of the portfolio would be in more traditional government bonds, or potentially investment-rate corporate bonds" (Interviewee 5, 22.1.2015)

"our clients they do have a liability-matching or hedging portfolio … to get some of that interest rate sensitivity of their liabilities. But next to that we have a return-seeking portfolio and that is a very diverse portfolio … which should deliver returns to give an attractive proposition to pension funds to earn enough returns to achieve their long-term liability goals." (Interviewee 2, 16.1.2015)

Minsky's liability view of portfolio decisions offers a helpful analytical framework to theorize this new way of operating by ICPF. In *John Maynard Keynes* (Minsky, 1975) puts forward a re-interpretation of Keynes' liquidity and portfolio demand theory of the 'own rate of interest'. In the original Keynesian formulation, such a theory states that an asset is valued on the basis of its predicted returns (q), minus its carrying costs (c) and a liquidity premium (l), that is its ability to work as a store of value and means of payment in the presence of fundamental uncertainty (Keynes, 1936). Minsky depicts a modern monetary economy in terms of balance sheets and cash flows:

"In a capitalist economy, one way every economic unit can be characterized is by its portfolio: the set of tangible and financial assets it owns, and the financial liabilities on which it owes ... Both assets and liabilities ... set up cash receipts or expenditures over some fixed or variable future time period" (p. 70).

In such a monetary economy, the theory of the 'own rate of interest' acquires a particular balance sheet interpretation. The returns are cash inflows from the asset side of a balance sheet, the costs of holding such assets are the cash commitments from its liabilities, and the liquidity premium is the implicit yield that assets owe to their ease of disposal at no or little loss to be used to settle current and future obligations.

Thus, in this Minskyan view, the demand for an asset will be determined by the extent and nature of the cash flow it generates *relative* to the investor's liabilities and the ability to convert the asset at no loss into the unit in which her liabilities are denominated. Deviations of an asset from a given liability structure and/or difficulties to sell it, have to be compensated with higher expected cash flows. In this view, liquidity preference encompasses the whole balance sheet choice between capital/non-liquid financial assets and liquid assets on the asset side, and the choice of borrowing on the liability side. Ceteris paribus, a more liquid asset, that is an asset that is more able to meet an agent's current and future obligations, will always be preferred.

This balance sheet view of portfolio decisions can well account for current ICPF LDI practice. Firstly, it is in relationship to liabilities that all financial assets bought by ICPF are defined. As illustrated in Figure 1, financial assets are evaluated along a spectrum representing their ability to produce cash flows that mimic the obligations of ICPF liabilities and/or their sensitivity to factors that affect their valuation (e.g. discount rates, longevity, or inflation).

[Insert Figure 1 here]

At one end of the spectrum, AE government bonds are best suited to match ICPF liabilities, as they offer a predictable series of cash flows and their valuation responds to changes in interest rates the same way as the value of ICPF liabilities does.

As pointed out by a European pension fiduciary company manager:

"because all the pension liabilities are in euros and rather long-term, the liability-matching … portfolio basically uses interest rates swaps plus European government bonds" (Interviewee 2, 16.1.2015)

For the benefit of having their liabilities well matched, and thus a stable funding level, ICPF are prepared to sacrifice higher returns.

At the other end of the spectrum, lie assets that are less suitable to match liabilities (e.g. through an uncorrelated cash flow) and are therefore allocated to the return-seeking portfolio. These assets will only be demanded insofar as their lower capability to match liabilities is compensated by higher expected cash flows. This, for example, is the case for equities, whose cash flows (dividend payments) are uncertain by definition and hence cannot be used to match the regular liabilities of ICPF. Furthermore their value is subject to frequent readjustments, which depend on a greater range of factors than those affecting the valuation of ICPF liabilities.

Given the risk associated with equities, ICPF have started to include other assets into their return-seeking portfolio, including hedge funds, private equity, infrastructure, commodities, high-yield debt, real estate and indeed EM. Importantly, while these assets, according to the LDI framework, are allocated to the return-seeking portfolio, they might still differ according to their ability to match ICPF liabilities. For example, infrastructure can produce a relatively stable pattern of cash flows that can be used to match cash obligations, even if still falling short of the criteria to be considered a liability-matching asset. Thus, whereas conceptually the ability to match liabilities is one of degree and moves along a continuous spectrum, in practice under LDI ICPF need to make a dichotomous choice about which assets to allocate to which portfolio.

The second way Minsky can help us to theorise ICPF behaviour is that the condition of their liabilities will itself affect their liquidity preference, manifested in the relative allocation towards liability-matching and high-return assets (when liquidity preference is high/low, matching/risky assets will be favoured). The ultimate goal of ICPF is to meet their liabilities. Their liquidity preference is a consequence of how to best achieve such a goal: in conditions where their assets fully cover their liabilities, liquidity preference increases in order to safely match future cash outflows; where deficits arise, the pressure to generate returns dominates, decreasing liquidity preference. This imposes an institutionally-driven liquidity preference behaviour on ICPF. Funding deficits imply a situation whereby current assets are insufficient to meet future liabilities. This means ICPF *have to* allocate a higher share of their portfolio to riskier assets in order to generate the necessary cash flow. As one pension fund investment adviser put it:

"if you are underfunded then you need to close that funding deficit, … and you need your investments to do more work, and that means investing in things that have a higher expected return ... If you get better funded, growth is less of an issue… for the schemes that get very well-funded there is very little incentive to take investment risk, so they tend to de-risk" (Interviewee 5, 22.1.2015)

This Minskyan view adds to the literature's traditional arguments about governance and financial stability discussed in section 2. Rather than simply the product of pure short-termism and herding, ICPF' demand for risky assets is determined by their structural need to generate sufficient returns to meet growing liabilities in the face of changing demographics and falling returns on the main liability-matching assets such as bonds. Through this mechanism the centrality of liabilities becomes a binding constraint on ICPF investments: it is no so much that "trustees prefer alternative assets to bonds in their quest to match assets with liabilities" (Monk, 2009: 874) but rather that they currently *need* these assets to enhance their cash flows.

Finally, our Minskyan framework points to the fundamental implications such a liability-focused investment practice has for financial (in)stability. The degree to which assets can match ICPF liabilities matters for the stability of demand. As Hardie (2007) shows, ICPF liability-matching strategies are likely to create a degree of 'loyalty' towards domestic government bond holdings. On the other hand, given the large set of investment alternatives, return-seeking strategies are likely to be less stable, and prone to the instability that critics of pension fund capitalism put forward. Moreover, as said, asset demand might change as a result of changes in the relative demand for liability-matching and return-seeking assets rather than in the assets themselves.

This instability can be exacerbated by external asset managers which become crucial for a successful LDI strategy given the need for portfolio reallocation (both within and between the return-seeking and liability-matching portfolio) and the increased diversity and complexity of the assets included in the return-seeking portfolio. From a Minskyan perspective, asset managers increase the liquidity of these assets for ICPF, which can more easily change the composition of their investments through them. This can, however, make the demand for individual asset classes more volatile, as ICPF rearrange their investments in line with their LDI needs. Furthermore, asset managers may themselves add to this instability as they frequently rebalance their portfolio, in order to meet return targets and attract and maintain ICPF clients. This may induce destabilising behaviours such as 'reaching for yield' and herding, which may generate competitive short-term returns but aggravates systemic risk[vii] (Clark and Monk, 2017).

The enormous size and homogenous behaviour of ICPF might also contribute to boom dynamics in those asset classes which periodically appear to offer the best returns with some ability to match their liabilities, but boast relatively thin markets and limited supply. Indeed ICPF have been central to the long boom in equity prices (Toporowski, 2000), the rise and fall in asset-backed securities and commodities (Lysandrou and Nesvetailova, 2015; Wray, 2008), real estate (Fernandez and Aalbers, 2016) and most recently in the rise of 'alternatives', such as hedge funds and private equity (Bonizzi and Churchill, 2017; OECD, 2015).

LDI and ICPF Investment in Emerging Markets

This shift to LDI, and the subsequent changes in international financial markets, have had crucial implications for ICPF asset allocation. Figure 2 shows the evolution of US ICPF' assets and liabilities over the last 15 years[viii].

[Insert Figure 2 here]

One can observe the dramatic impact of the 'perfect storm' in the beginning of 2000, as falling asset prices and rising liabilities left many ICPF with a substantial funding deficit. While the bull markets in the 2000's allowed assets to recover more quickly than liabilities, creating a temporary surplus, the 2008 crash re-opened these large deficits: stock prices fell again dramatically, further revealing how equities had become a poor match for ICPF liabilities; moreover, falling interest rates reduced the returns ICPF could generate on their liability-matching assets while at the same time increasing the value of their liabilities discounted with these rates, thus dynamically widening the gap between assets and liabilities. In addition to generally loose monetary conditions in AE, the declining trend in interest rates has been the product of a shortage of high-quality assets (Caballero et al., 2017; Fernandez and Aalbers, 2016; Lysandrou, 2011). The causes of this shortage have been multiple: the 'global standards', which sought to make the international financial system more stable, have effectively constrained the supply of such assets; austerity and lower public borrowing in AE have reduced the supply of highly rated government bonds; the growth of new investors, such as Sovereign Wealth Funds and high-net-worth individuals, has added to global asset demand; and finally, quantitative easing, which added central banks as key purchasers of highly rated assets, reduced the stock available for private investors.

In line with the LDI framework set out above, these funding deficits caused a fundamental shift in ICPF asset allocations. ICPF must keep a large share of their investments in liability-matching assets, i.e. AE government bonds. However, in the environment of low interest rates and funding levels, this type of strategy has become constrained by the need to generate additional returns to grow their portfolios in line with liabilities. While direct holdings of equities have represented the traditional source of returns for ICPF, they have become less attractive due to the reasons outlined above.

The resulting compromise has been to keep a sizeable liability-matching portfolio, while altering the composition of their return-seeking portfolio. ICPF have looked for assets that can give them higher expected returns and have diversified across a broader range of return-seeking assets (to reduce the individual asset risks). Both have allowed them to raise returns without the need to increase allocation to return-seeking assets as a whole and thus compromise their funding positions.

As a result, as can be seen in Figure 3, allocation to equities has fallen from over 30% in 1999 to about 15% in 2014. At the same time, the percentage allocated to 'funds' (including a range of externally managed return-seeking assets) increased from about 11% to 28%.

[Insert Figure 3 here]

It is along these dimensions that ICPF demand for EM assets can be understood. EM represent one way to raise returns, while (seemingly) not increasing risk exposures excessively. The improvement in macroeconomic fundamentals in many of these countries has made ICPF less wary about holding EM assets. At the same time, they provide international diversification benefits to the extent that their returns are not perfectly correlated with advanced financial markets. As a pension fund investment adviser, explained:

"if you got a large deficit and you have a big hole to fill, a big bridge to build, to full funding, then you need to make your assets work harder, and generally may allocate more to growth assets, which would result in higher allocation to EM[ix]" (Interviewee 8, 2.5.2015)

Figure 4 shows the remarkable growth of ICPF in EM assets, in particular after the global crisis of 2008. As of September 2013, the exposure amounted to just under one trillion of US dollars. This is roughly equal to 21.5% of total portfolio liabilities of EM[x].

[Insert Figure 4 here]

Holdings of EM assets have not only increased in absolute terms but also as a relative share of ICPF portfolios. An estimation based on the EPFR and OECD data used thus far suggests that just under 2% of ICPF total portfolio is invested in EM as of the end of 2013, up from 0.17% at the turn of the century. While these allocations appear small in relative terms, they translate into sizeable numbers for EMs. Moreover, these data are likely to underestimate the actual allocations, as EPFR data only take into account assets that are intermediated through funds, thus not accounting for direct asset holdings of ICPF.

This situation has remained largely unchanged since the global financial crisis. Bond yields remain low and funding deficits large (OECD, 2015), which means the "hunt for returns" by ICPF continues to be a defining feature of their behaviour (Smith, 2017). Indeed, interest in EM by ICPF has kept growing, as shown in Figure 5, which shows the share of institutional investors in several major EM currencies in 2013 and 2016. This is despite repeated macro-financial shocks, such as the tapering of Quantitative Easing policies in 2013 and the commodity price collapse in 2015, which had a negative impact on EM outlooks, but did not fundamentally change the liability-driven pressures that originated the ICPF demand for EM assets.

[Insert Figure 5 here]

Reflecting the uneven spatial distribution of 'global' financial activities, the majority of these ICPF flows have stemmed from a small group of AE, with a sufficiently long history of private provision of retirement income. As of 2014, almost 80% of global pension assets were concentrated in three countries: UK, US and Japan (Bonizzi, 2017b). In line with our Minskyan LDI framework, ICPF demand from different jurisdictions might vary depending on the specific IRM affecting their liability structure. The three dominant AE remain very similar in their institutional and regulatory environment regarding funding and asset allocations, thus forming a core block of global ICPF (Pugh and Yermo, 2008). The interviews, however, showed that ICPF from smaller jurisdictions, for example Scandinavian countries, are subject to tighter rules

with regards to the risk taking in their return-seeking strategies which could reduce ICPF flows to EM should these institutions gain more global importance.

The same holds true for ICPF from EM. Although still too small to make a difference globally, these institutions have started to have an impact on domestic financial markets, especially in Latin America. These institutions could potentially act differently from foreign investors in domestic financial markets, since their liabilities would be located domestically; however so far empirical evidence is mixed in this regard (Raddatz, 2014).

Although constructed as an asset class[xi], geography also continued to matter in the allocation of these flows across EM. Based on data from the IMF Coordinated Portfolio Investment Survey, as of 2016 more than half of total ICPF investments to EM were concentrated in five countries: Mexico, South Korea, Brazil, India and China. Furthermore, there was an increasing awareness among ICPF that, as their markets grow, EM could not be treated simply as a homogenous asset class:

"These countries are becoming quite big in terms of size and markets. So, it's a very diverse asset class, therefore it's becoming harder and harder to generalise things, you cannot talk about one EM class" (Interviewee 10, 5.2.2015).

The Minskyan framework proposed in this paper can also account for this spatial differentiation. Whereas EM as an asset class offer the cash flow and diversification benefit needed in the era of rising ICPF liabilities, individual EM assets according to the return/cash flow they provide and where they sit along the continuum described in the previous section according to their ability to match these liabilities. Such ability depends on the distinct geographical IRM conditions an asset is embedded in.

For example, the ability to sell quickly and at no loss is shaped fundamentally by the breadth and depth of financial markets, their architecture, and actors, including the existence of effective market makers and lenders/dealers of last resort. The extent to which local governance and accounting standards, regulation, and balance sheet rules adhere to AE criteria is another (Hebb and Wójcik, 2005; Soederberg, 2003). In the case of cross-border capital flows, the ability to generate cash flows in foreign exchange, and the regulation of the foreign exchange market to reduce the price risk from exchange rate volatility and secure convertibility into the currency which denominates ICPF liabilities, are essential. Therefore, it is unsurprising that the biggest five EM recipients have the deepest and most liquid financial markets, internationally traded currencies and high levels of foreign exchange reserves - all among the top twenty globally according to BIS and World Bank data. Similarly, a country can join the investable EM group, if structural improvements guarantees a minimum degree of stability, or be forced to leave it, should their currency convertibility be called into question. Many interviewees for example voiced their concerns about Russia, which despite solid 'fundamentals' had an extremely volatile currency, mainly due to (geo)political uncertainty.

In sum, above section has shown how structural liability pressures, in the form of persistent funding deficits, have induced changes in ICPF asset allocations and 'pushed' them

into EM assets. Even if ICPF would like to hold 'safe' assets which perfectly match their liabilities, these deficits have meant they had to invest into high-return assets such as EM. Spatial variegation was the result of different return-liquidity characteristics. This liability-driven allocation of portfolios, however, has important implications for financial stability which we turn to in the next section.

LDI and Financial Stability in Emerging Markets

The key contention put forward is that EM assets are ultimately not well suited at matching ICPF liabilities due to their peripheral position in the spatially uneven international monetary and financial system. Although specific locations might increase the attractiveness of their assets through the IRM factors listed above, the structural monetary and financial subordination of EM means they will ultimately not be used as liability-matching assets, and therefore need to offer higher cash flows and will only be bought to be part of the return seeking portfolio.

First, the concentration of global liabilities in AEs and their mediation through the corresponding financial centres means that these locations exert pressures on the rest of the world to 'model' assets according to their domestic market characteristics (Bassens, 2012; Gowan, 1999; Hebb and Wójcik, 2005; Leyshon and Thrift, 1997). Deviations of these have to be compensated by higher cash flows. Whereas these deviations are inherent to cross-border flows, which by definition span different IRM conditions, they are arguably worse in EM given their historically distinct institutional set-ups, regulatory regimes, and governance structures. Moreover, EM financial markets remain thinner and undeveloped. This is partly a result of their general development trajectory, but also due to the centrifugal tendencies of financial activities (Clark, 2005; Dow, 1994). So far, liquidity remains concentrated in the financial centres of AE which puts EM at a structural disadvantage to the assets issued in these locations.

As a result, EM bonds cannot fully match the interest rate exposure of ICPF liabilities. LDI strategies involve government bond purchases that are exposed to the same interest rate sensitivity as ICPF liabilities. EM bonds fail to do so for two reasons. First, ICPF liabilities are discounted with high-quality bond rates. As of 2015, the average S&P rating for EM sovereign bonds was BBB- (Amstad and Packer, 2015) . Second, EM bond yields are unlikely to be representative rates for ICPF. While EM bonds have grown substantially in terms of market capitalization, they remain a relatively small component of world debt markets (JP Morgan, 2016). As EM bonds respond to different interest rates, which are not necessarily representative of the rates relevant to AE ICPF, they fail to properly hedge ICPF' interest rate risk induced by their liabilities.

Second, EM confront severe international monetary subordination given their currencies' limited international role, in particular for financial transactions (Andrade and Prates, 2013; Bonizzi, 2017a; Kaltenbrunner, 2015).[xii] One outcome of this monetary subordination is their structural need to borrow in foreign currency, especially US Dollars

(their so called 'original sin'; see, for example, Eichengreen and Hausmann (1999)). This means that EM debt, unlike most AE debt, bears some degree of credit risk. Whereas in the case of domestic currency debt, the central bank can act as lender of last resort, foreign currency debt engenders liquidity and solvency risk in the case of adverse exchange rate changes and/or an inability to generate the foreign exchange for debt servicing. This adds an element of uncertainty to the cash inflows, which make them unsuitable for matching liabilities.

Finally, although some EM sovereigns, in particular those with larger financial markets targeted by ICPF listed above, have been able to reduce their foreign currency borrowing (Arslanalp and Tsuda, 2015), the spatial concentration of international liabilities in AE means that EM remain structural net private debtors, with their foreign assets mostly consisting of public foreign exchange reserves. Whereas foreign investors have been willing to hold EM domestic assets, their liabilities remain concentrated in AE and their key financial centres. The asymmetry is even worse when it comes to the currency denomination of these liabilities, which are dominated by a few AE currencies first and foremost the US Dollar (Shin, 2016). This spatial and monetary concentration of international liabilities continues to expose EM to substantial exchange rate volatility largely independent of domestic economic conditions (Kaltenbrunner, 2015; Kohler, 2010). This exchange rate volatility, however, creates significant risks for international investors, in particular those holding domestic currency EM assets. This is particularly true for ICPF investing in EM: their liabilities are firmly embedded in their home countries and denominated in their currencies, whereas their assets are in (highly volatile) EM currency; a currency mismatch that renders liability matching impossible for ICPF.

For all these reasons, EM assets are bound structurally to remain in the return-seeking portfolios of ICPF. Again, quoting a pension fund investment officer:

"I could certainly tell that we do not nor would we for the foreseeable future regard these assets suitable for liability-matching purposes. They are part of the return-seeking portfolio" (Interviewee 9, 5.2.2015).

As discussed in the previous section, the demand for EM assets therefore needs to be understood in the context of the changing return-seeking portfolio of ICPF described in the previous section.

This creates two types of vulnerabilities. First, the very fact that EM assets are considered return-seeking assets, puts them in competition with many other assets classes that can perform the same role. Such a competition makes the demand for EM assets very unstable and sensitive to changes in the domestic and international environment, and to the changing availability of other return-seeking assets.

Secondly, the LDI framework shows that ICPF demand for EM assets depends largely on the conditions that create a need to seek return-seeking assets, which are entirely independent of economic conditions in EM. This, as shown in section 4, has been exacerbated by the deterioration of ICPF funding levels, driven by low interest rates and a shortage of safe assets, which force them to look for alternative returns.

This, however, also shows that ICPF' recent portfolio changes have not been entirely 'voluntary' or unconstrained investment choices. Given the institutional and regulatory pressures over liabilities discussed in previous sections, ICPF would ideally prefer to increase allocations to safer assets and reduce their exposure to return-seeking assets altogether, thereby immunising their funding levels from the volatility of their liabilities. As a pension fund investment officer points out:

"Then there's a headline deficit, again this is in common with most comparable funds. But that arguably reflects the very low bond yields that are currently prevailing in the UK and in other developed markets … if we were in a situation where we could de-risk, we would and will" (Interviewee 9, 5.2.2015)

These structural pressures mean that any changes in the liability conditions that improve ICPF' funding levels could lead to a major re-allocation of portfolios away from EM assets (again entirely unrelated to their domestic conditions).

"If the funding level goes up, so there's no need to increase allocation to growth assets, and literally buy lots of UK government bonds and go back to sleep" (Interviewee 12, 11.3,2015)

Conclusions

This paper has analysed the allocation of ICPF flows to EM assets. It has argued that a crucial element in the determination of these flows are the structural pressures emanating from their liabilities, in particular with reference to the distinction and relative need of 'return-seeking' or 'liability-matching' assets; a point not fully appreciated in the debates around 'pension funds capitalism'. To substantiate this argument theoretically, the paper developed and applied a Minskyan framework to the behaviour of ICPF.

Based on these theoretical observations, we have argued that the current demand for EM assets can be understood as part of a broader sectoral trend. Low interest rates create balance sheet-induced pressures on ICPF to generate returns, which is however constrained by the need to match liabilities. This pushes ICPF towards non-traditional asset classes, which can promise sufficiently high returns, whilst providing diversification benefits between them. The recent surge in ICPF allocation to EM assets has to be seen in this light. However, the paper also argued that ultimately, given their distinct characteristics and structural subordination in a spatially uneven international monetary and financial system, EM assets are not fit for liability-matching purposes. This means they are only sought to be part of ICPF's return-seeking portfolio, which makes ICPF demand for them very unstable and largely independent of EM domestic economic conditions.

This means, in contrast to what has been advocated by pension fund optimists and international organisations, ICPF will not stabilise EM financial markets. ICPF may have a long-

term outlook and potentially reduce short-term volatility, but the structural pressures emanating from their liabilities, firmly embedded in AE economies, and the large size of these institutions, imply that any relevant change in AE conditions may have severe implications for EM (as indeed evidenced by the IMF (2014) during the global financial crisis of 2008). This financial instability, however, undermines EM assets' ability to be used to meet outstanding obligations and/or to become international unit of accounts, further perpetuating their subordinate position in this spatially uneven international financial and monetary system (and vice versa for those spaces and places sitting on the top).

References

Amstad M, Packer F, 2015, "Sovereign ratings of advanced and emerging economies after the crisis" *BIS Quarterly Review*, https://www.bis.org/publ/qtrpdf/r_qt1512h.htm

Andrade R P, Prates D M, 2013, "Exchange rate dynamics in a peripheral monetary economy" *Journal of Post Keynesian Economics* **35**(3) 399–416

Arslanalp S, Tsuda T, 2015, "Emerging Market Portfolio Flows; The Role of Benchmark-Driven Investors", International Monetary Fund, https://ideas.repec.org/p/imf/imfwpa/15-263.html

Barnes T J, Christophers B, 2018 *Economic Geography: A Critical Introduction* Critical edition (Wiley-Blackwell)

Bassens D, 2012, "Emerging Markets in a Shifting Global Financial Architecture: The Case of Islamic Securitization in the Gulf Region" *Geography Compass* **6**(6) 340–350

BIS, 2011, "Fixed income strategies of insurance companies and pension funds", Bank for International Settlements, http://www.bis.org/publ/cgfs27.htm

Blackburn R, 1999, "The New Collectivism: Pension Reform, Grey Capitalism and Complex Socialism" *New Left Review* **233** 3–65

BoJ, 2018, "Flow of Funds for the Fourth Quarter of 2017", Bank of Japan, https://www.boj.or.jp/en/statistics/sj/sjexp.pdf

Bond P, 1998 *Uneven Zimbabwe: A Study of Finance, Development, and Underdevelopment* (Africa World Press)

Bonizzi B, 2017a, "An Alternative Post-Keynesian Framework for Understanding Capital Flows to Emerging Markets" *Journal of Economic Issues* **51**(1) 137–162

Bonizzi B, 2017b, "Institutional investors' allocation to emerging markets: A panel approach to asset demand" *Journal of International Financial Markets, Institutions and Money* **47** 47–64

Bonizzi B, Churchill J, 2017, "Pension funds and financialisation in the European Union" *Revista de economía mundial* **46** 71–90

Bryan D, Rafferty M, Wigan D, 2017, "From Time-Space Compression to Spatial Needs: Situating Nationality in Global Financial Liquidity", in *Money and Finance After the Crisis: Critical Thinking for Uncertaint Times* Eds B Christophers, A Leyshon, and G Mann (Wiley-Blackwell), pp 43–69, https://onlinelibrary.wiley.com/doi/10.1002/summary

Burger J D, Warnock F E, 2006, "Local Currency Bond Markets", National Bureau of Economic Research, http://www.nber.org/papers/w12552

Caballero R J, Farhi E, Gourinchas P-O, 2017, "The Safe Assets Shortage Conundrum" *Journal of Economic Perspectives* **31**(3) 29–46

Christophers B, Leyshon A, Mann G, 2017, "Money and Finance After the Crisis: Taking Critical Stock", in *Money and Finance After the Crisis: Critical Thinking for Uncertain Times* Eds B Christophers, A Leyshon, and G Mann (Wiley-Blackwell), pp 1–40

Clark G L, 2000 *Pension Fund Capitalism* (Oxford University Press)

Clark G L, 2001, "Requiem for a National Ideal? Social Solidarity, the Crisis of French Social Security, and the Role of Global Financial Markets" *Environment and Planning A* **33**(11) 2003–2024

Clark G L, 2002, "London in the European financial services industry: locational advantage and product complementarities" *Journal of Economic Geography* **2**(4) 433–453

Clark G L, 2003, "Pension Security in the Global Economy: Markets and National Institutions in the 21st Century" *Environment and Planning A* **35**(8) 1339–1356

Clark G L, 2005, "Money Flows like Mercury: The Geography of Global Finance" *Geografiska Annaler. Series B, Human Geography* **87**(2) 99–112

Clark G L, Hebb T, 2005, "Why should they care? The role of institutional investors in the market for corporate global responsibility" *Environment and Planning A* **37**(11) 2015–2031

Clark G L, Monk A H B, 2006, "The 'crisis' in defined benefit corporate pension liabilities Part I: Scope of the problem" *Pensions: An International Journal* **12**(1) 43–54

Clark G L, Monk A H B, 2007, "The 'crisis' in defined benefit corporate pension liabilities Part II: Current solutions and future prospects" *Pensions: An International Journal* **12**(2) 68–81

Clark G L, Monk A H B, 2017 *Institutional Investors in Global Markets* (Oxford University Press)

Clark G L, Urwin R, 2008, "Best-practice pension fund governance" *Journal of Asset Management* **9**(1) 2–21

Collie B, Osborn J, 2011, "LDI's role in pension plan strategy: Risk and return considerations", Russel Investments Research

Corbridge S, Martin R, Thrift N, 1994, "Money, power, and space: Introduction and Overview", in *Money Power and Space* Eds S Corbridge, R Martin, and N Thrift (Blackwell)

Dow S, 1994, "European monetary integration and the distribution of credit availability", in *Money Power and Space* Eds S Corbridge, R Martin, and N Thrift (Blackwell)

Dymski G A, 1999, "Asset Bubbles and Minsky Crises in East Asia: A Spatialized Minsky Approach", Department of Economics, University of California-Riverside

Dymski G A, 2017a, "Finance and Financial Systems: Evolving Geographies of Crisis and Instability", in *The New Oxford Handbook of Economic Geography* Eds G L Clark, M P Feldman, M S Gertler, and D Wojcik (Oxford University Press)

Dymski G A, 2017b, "Making Financial Instability Visible in Space as Well as Time: Towards a more Keynesian Geography", in *Money and Finance After the Crisis Critical Thinking for Uncertain Times* Eds B Christophers, A Leyshon, and G Mann (Wiley-Blackwell), pp 91–116

Eichengreen B, Hausmann R, 1999, "Exchange Rates and Financial Fragility", National Bureau of Economic Research, http://www.nber.org/papers/w7418

Engelen E, 2003, "The logic of funding European pension restructuring and the dangers of financialisation" *Environment and Planning A* **35**(8) 1357 – 1372

Fernandez R, Aalbers M B, 2016, "Financialization and housing: Between globalization and Varieties of Capitalism" *Competition & Change* **20**(2) 71–88

Franzen D, 2010, "Managing Investment Risk in Defined Benefit Pension Funds", OECD Publishing, http://www.oecd.org/finance/private-pensions/44899253.pdf

French S, Leyshon A, Wainwright T, 2011, "Financializing space, spacing financialization" *Progress in Human Geography* **35**(6) 798–819

Gowan P, 1999 *The Global Gamble: Washington's Faustian Bid for World Dominance* First Edition (Verso Books)

Hardie I, 2007 *Trading the Risk: Financialisation, Loyalty and Emerging Market Government Policy Autonomy*, University of Edinburgh

Harvey D, 2003 *The New Imperialism* (Oxford University Press)

Harvey D, 2006 *The limits to capital* New and fully updated ed (Verso)

Hebb T, Wójcik D, 2005, "Global standards and emerging markets: the institutional-investment value chain and the CalPERS investment strategy" *Environment and Planning A* **37**(11) 1955–1974

IMF, 2014, "How do changes in the investor base and financial deepening affect emerging market economies?", in *Global financial stability report, April* Ed IMF (International Monetary Fund), pp 67–99

IMF, 2015, "The asset management industry and financial stability", in *Global financial stability report, September* Ed IMF (International Monetary Fund), pp 93–135

JP Morgan, 2016, "Guide to the Markets", JP Morgan

Kaltenbrunner A, 2015, "A post Keynesian framework of exchange rate determination: a Minskyan approach" *Journal of Post Keynesian Economics* **38**(3) 426–448

Kaltenbrunner A, Painceira J P, 2018, "Subordinated Financial Integration and Financialisation in Emerging Capitalist Economies: The Brazilian Experience" *New Political Economy* **23**(3) 290–313

Keynes J M, 1936 *The General Theory Of Employment, Interest, And Money* (CreateSpace Independent Publishing Platform)

Kohler M, 2010, "Exchange rates during financial crises" *BIS Quarterly Review*, https://ideas.repec.org/a/bis/bisqtr/1003f.html

Langley P, 2004, "In the eye of the 'perfect storm': the final salary pensions crisis and financialisation of Anglo-American capitalism" *New Political Economy* **9**(4) 539–558

Langley P, 2008, "Pension fund capitalism, pension fund socialism, and dissent from investment", in *Global economy contested: power and conflict across the international division of labour* (Routledge, London), pp 141–157

Leyshon A, Thrift N J, 1997 *Money/space: Geographies of Monetary Transformation* (Routledge)

Liang Y, 2011, "Money-manager capitalism, capital flows and development in emerging market economies: a Post-Keynesian institutionalist analysis", in *Financial instability and economic security after the great recession* Ed C J Whalen (Edward Elgar), pp 179–201

Lysandrou P, 2011, "Global Inequality and the Global Financial Crisis: The New Transmission Mechanism", in *The Handbook of Globalisation* Ed J Michie (Edward Elgar Publishing), pp 495–517

Lysandrou P, Nesvetailova A, 2015, "The role of shadow banking entities in the financial crisis: a disaggregated view" *Review of International Political Economy* **22**(2) 257–279

McKinnon R I, Pill H, 1998, "International overborrowing: A decomposition of credit and currency risks" *World Development* **26**(7) 1267–1282

Meeteren M V, Bassens D, 2016, "World Cities and the Uneven Geographies of Financialization: Unveiling Stratification and Hierarchy in the World City Archipelago" *International Journal of Urban and Regional Research* **40**(1) 62–81

Minns R, 1996, "The Social Ownership of Capital" *New Left Review* **219** 42–61

Minsky H, 1975 *John Maynard Keynes* 1st edition (McGraw-Hill)

Minsky H, 1986 *Stabilizing an Unstable Economy* (McGraw-Hill)

Monk A H B, 2009, "The Geography of Pension Liabilities and Fund Governance in the United States" *Environment and Planning A* **41**(4) 859–878

Moore M J, Schrimpf A, Sushko V, 2016, "Downsized FX markets : causes and implications" *BIS Quarterly Review*, http://www.bis.org/publ/qtrpdf/r_qt1612e.htm

Novy-Marx R, Rauh J D, 2009, "The Liabilities and Risks of State-Sponsored Pension Plans" *The Journal of Economic Perspectives* **23**(4) 191–210

OECD, 2015, "Can pension funds and life insurance companies keep their promises?", in *OECD Business and Finance Outlook 2015* (Organisation for Economic Co-operation and Development), pp 111–147, http://www.oecd-ilibrary.org/content/chapter/9789264234291-8-en

Panitch L, Gindin S, 2005, "Finance and American Empire" *Socialist Register* **41**(41)

Pension Protection Fund, 2016, "The Purple Book: DB Universe Risk Profile 2016", Pension Protection Fund

Pike A, Pollard J, 2010, "Economic Geographies of Financialization" *Economic Geography* **86**(1) 29–51

Pryke M, 1994, "Urbanizing Capitals: Towards an Integration of Time, Space and Economic Calculations.", in *Money Power and Space* Eds S Corbridge, R Martin, and N Thrift (Blackwell)

Pugh C, Yermo J, 2008, "Funding Regulations and Risk Sharing", Organisation for Economic Co-operation and Development, http://www.oecd-ilibrary.org/content/workingpaper/241841441002

Raddatz C, 2014, "Institutional Investors and Agency Issues in Latin American Financial Markets: Issues and Policy Options", in *Emerging Issues in Financial Development* (World Bank), pp 265–316

Rauh J D, 2009, "Risk Shifting versus Risk Management: Investment Policy in Corporate Pension Plans" *Review of Financial Studies* **22**(7) 2687–2733

Shin H S, 2016, "Global liquidity and procyclicality", World Bank, http://www.bis.org/speeches/sp160608.htm

Sidaway J D, Bryson J R, 2002, "Constructing Knowledges of 'Emerging Markets': UK-Based Investment Managers and Their Overseas Connections" *Environment and Planning A: Economy and Space* **34**(3) 401–416

Smith H, 2017, "Investors grow more adventurous in their search for income" *Financial Times*, https://www.ft.com/content/eba07568-f9ef-11e6-bd4e-68d53499ed71

Soederberg S, 2003, "The promotion of 'Anglo-American' corporate governance in the South: Who benefits from the new international standard?" *Third World Quarterly* **24**(1) 7–27

Sokol M, 2017, "Financialisation, financial chains and uneven geographical development: Towards a research agenda" *Research in International Business and Finance* **39**(PB) 678–685

Toporowski J, 2000 *The End of Finance: Capital Market Inflation, Financial Derivatives and Pension Fund Capitalism* (Routledge)

Whalen C J, 2001, "Integrating Schumpeter and Keynes: Hyman Minsky's Theory of Capitalist Development" *Journal of Economic Issues* **35**(4) 805–823

Wójcik D, 2013, "The Dark Side of NY–LON: Financial Centres and the Global Financial Crisis" *Urban Studies* **50**(13) 2736–2752

Wray L R, 2008, "The Commodities Market Bubble: Money Manager Capitalism and the Financialization of Commodities", Levy Economics Institute, http://www.levyinstitute.org/pubs/ppb_96.pdf

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[i] LDI is defined here as the investment framework where assets are chosen according to their capacity to be used to meet outstanding and future liabilities. Sometimes LDI is used in a narrower sense to indicate specific types of immunisation strategies that ICPF may use to match their liabilities (Franzen, 2010). We use it to indicate the broader impact that liabilities have on the overall asset allocation framework of ICPF.

[ii] Thus, dominant money and financial capital acts as a 'financial homogeniser' (Leyshon and Thrift, 1997), whilst never eradicating spatial variegation which is the sine-qua-non for financial returns and arbitrage opportunities (Bryan et al., 2017; Christophers et al., 2017; Pryke, 1994). Indeed, while pushing for the reduction in certain risks stemming from geographical differences, e.g. through global governance standards and/or balance sheet rules such as Basel (Soederberg, 2003), the actions of dominant capital might create new territorialisation (Barnes and Christophers, 2018), though potentially more on its terms (e.g. the constructed geographies of EM (Sidaway and Bryson, 2002).

[iii] A different approach to 'spatialize' Minsky's is put forward by Dymski (2000) who argues that flows between 'bordered economies' are nominal flows which, if chasing real asset, can give rise to asset bubbles, though mediated by specific spatial factors.

[iv] ICPF, it was argued, used a too high discount rate, which resulted in an underestimation of their liabilities. The main issue in this literature, particularly in the context of increasingly complex investments such as mortgage-backed securities, became the change in pension fund governance based on the primary goal of "ensuring pensioner security" (Monk, 2009: 872).

[v] This point also applies to a relatively large literature in the field of finance, fundamentally concerned with understanding the microeconomic behaviour of ICPF, and how liabilities may affect the incentive structure in favour of more or less risky assets (Novy-Marx and Rauh, 2009; Rauh, 2009).

[vi] Regulatory changes regarding the discount rates that ICPF use to calculate the present value of their future cash outflows have also played a role in the adoption of LDI. Since the 'perfect storm', regulation and accounting rules have moved towards a marked-to-market reporting of both assets and liabilities, which means ICPF liabilities are periodically readjusted in line with current interest rates (Pugh and Yermo, 2008; Franzen, 2010). As a result, officially reported liabilities have become more volatile, driven by the movement of the underlying discount rates, which has further reinforced ICPF' need for LDI.

[vii] In this context some interviewees highlighted the rise of "diversified growth funds", which respond to ICPF's need for return-seeking assets, by investing across several – but not pre-set – asset classes. ICPF may therefore be exposed to certain risky assets without fully being aware of it.

[viii] Comprehensive data on funding deficits across countries does not exist, but similar dynamics can be found for the UK (Pension Protection Fund, 2016) and Japan (BoJ, 2018).

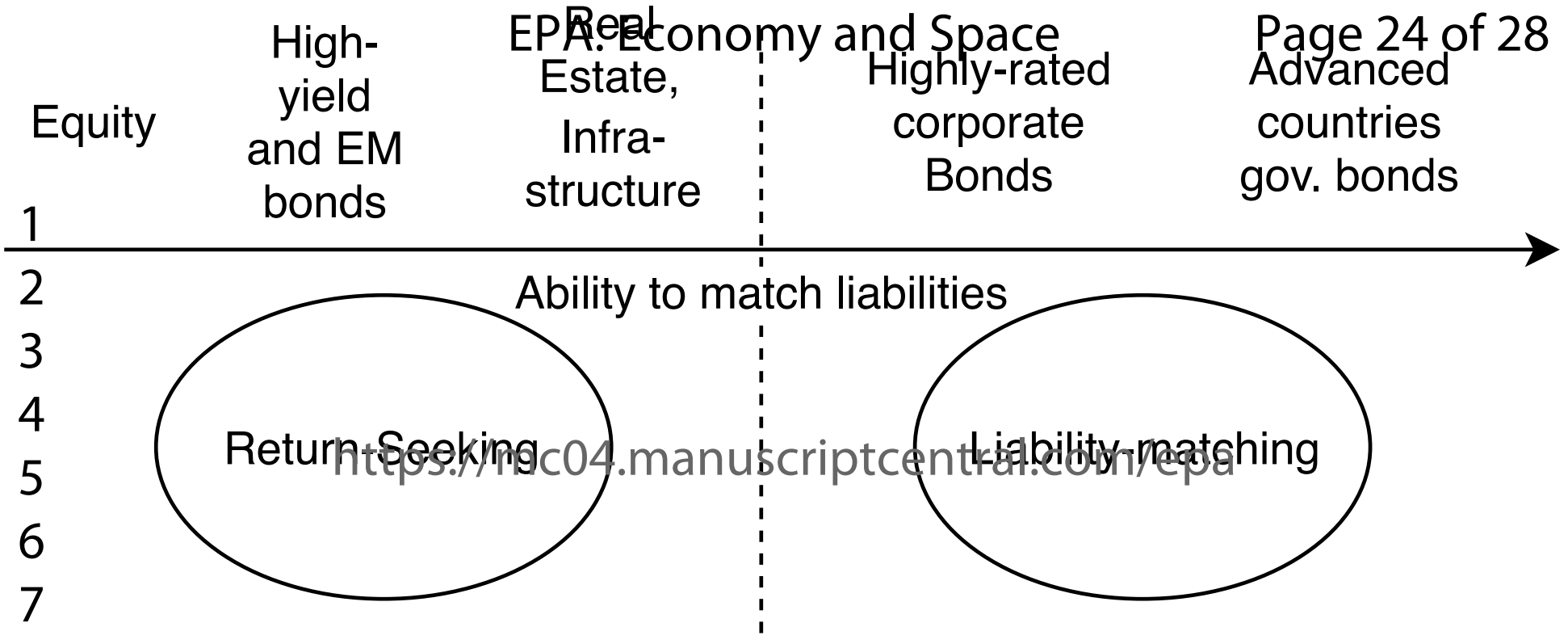
[ix] Bonizzi (2017b) presents econometric results, suggesting that aggregate higher funding deficit in advanced countries increase institutional investors' allocation to EM.

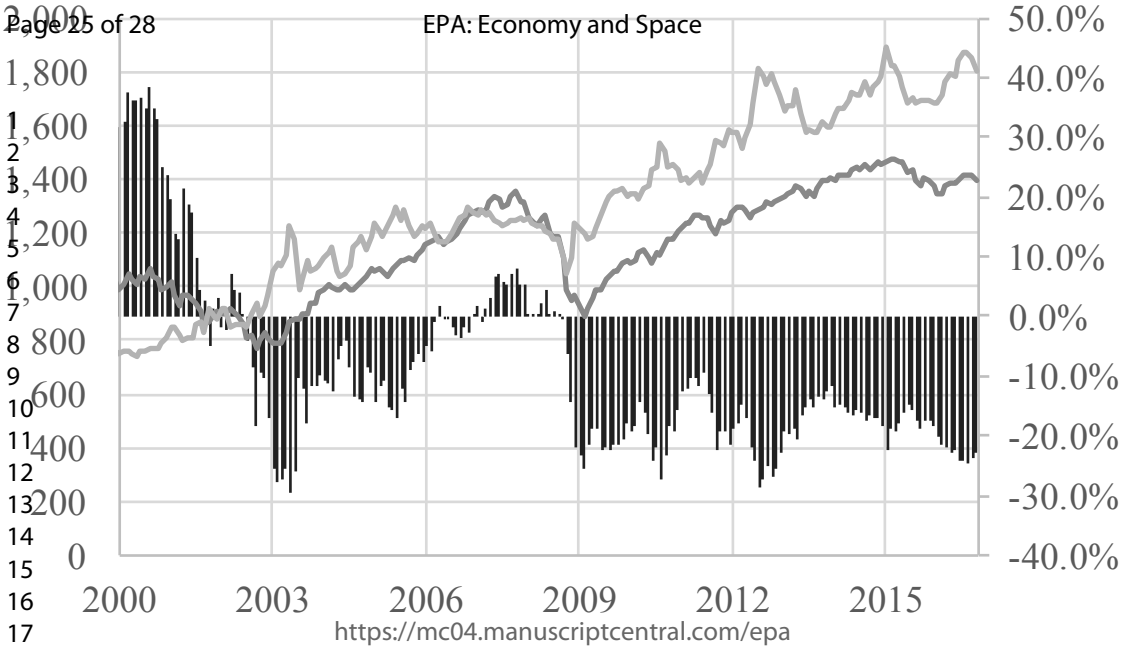
[x] Source: IMF BOPS

[xi] As highlighted by financial geographers e.g. Sidaway and Bryson (2002) the term EM itself is a constructed category to make these assets 'investible' for AE investors. It is subject to change, depending on metrics designed in AE financial centres and the specific (political) purpose used. Based on the MSCI Emerging Market index 2014 we have included:

Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey.

[xii] A discussion of the reasons for this international monetary subordination goes beyond the remit of this paper. In a nutshell, whereas neoclassical authors largely base those in national policy making, e.g. EM' inflationary past (Burger and Warnock, 2006; McKinnon and Pill, 1998), heterodox economists and critical political economy scholars focus on EM' subordinate integration in the international economy, ranging from their colonial dependence and role as commodity producer to the self-perpetuating power asymmetries in an unevenly structured international financial system (Andrade and Prates, 2013; Kaltenbrunner, 2015).

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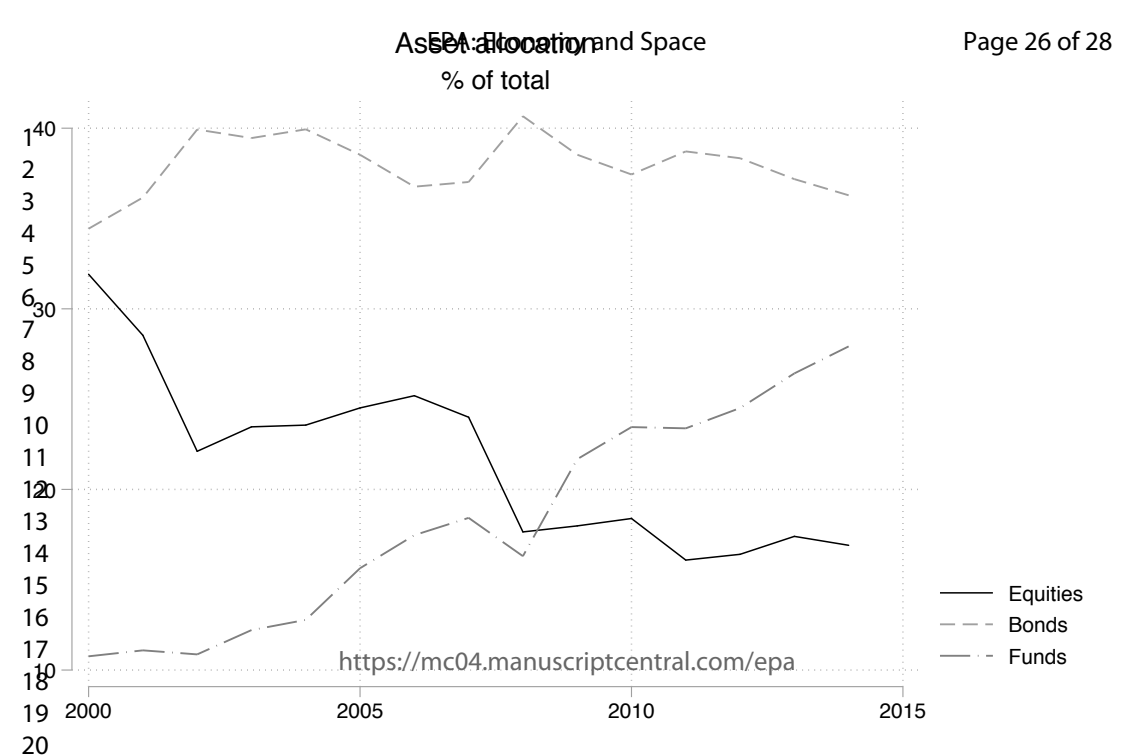
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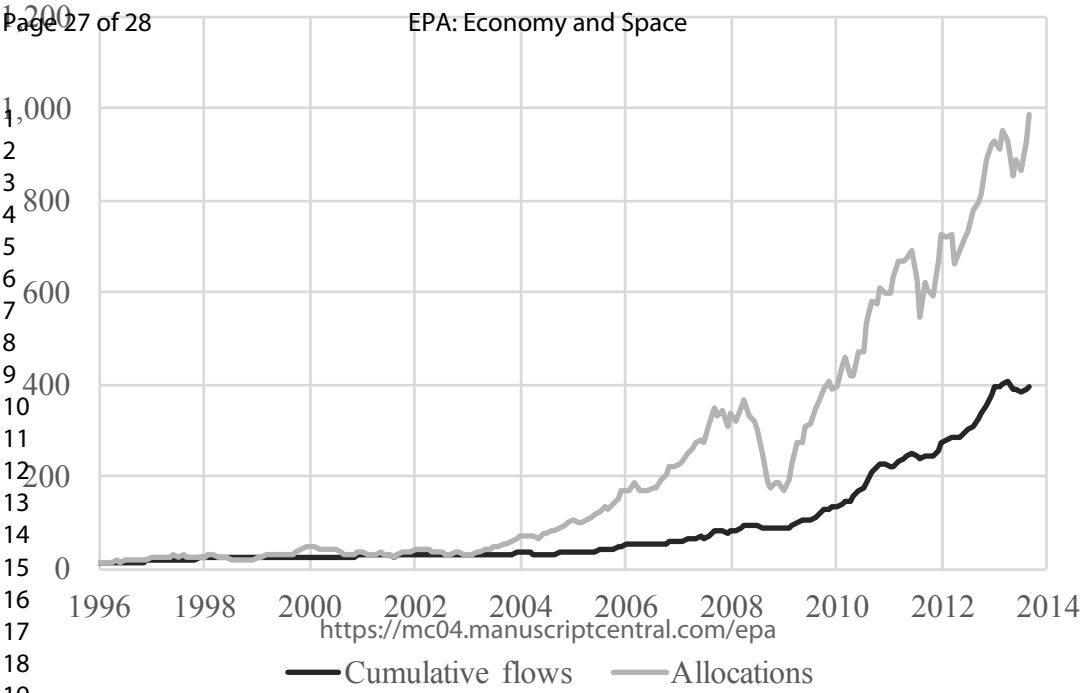
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