Sovereign wealth funds in the mutation of global finance

MICHEL AGLIETTA

University of Paris Nanterre and CEPII

Sovereign wealth funds (SWFs) started making the headlines in the midst of the global financial crisis. They were welcomed neither by academics nor by politicians of Western countries. In a flurry of 2008 papers SWF were peremptorily told what they should and shouldn’t do. The reasoning underlying the prescriptive norms was flawed in two respects. First it simply equated SWFs to other institutional investors. Second it advocated models of asset allocation based upon the efficient market hypothesis, while the global financial system itself was crumbling! The present paper takes a radically different view. It shows precisely how SWF balance sheets are interconnected with the balance sheets of the public sector of the nation whose wealth they transfer over time. Therefore they are, by their very nature, strategic actors. Their objectives, which shape their asset liability management, participate in the long-run policy of their nation. Their business model is framed on the integration of their asset liability management into the national political framework. Their governance cannot abstract from the broader environment, which has been upset by the transformation of the world economy. The financial crisis has invalidated the Wall Street paradigm of market finance, intermediated by global investment banks to finance long-term investment worldwide. The retrenchment of European banks in cross-border lending enhances the role of public finance in emerging market economies. Meanwhile the catching up process, which has been reaching more and more developing countries, calls for huge amounts of real investments. This is why a regime shift in finance is under way, which gives prominence to public investors. The last part of the paper shows how public private collaboration is arranged in China to finance small and medium-sized enterprises through private equity funds.

A. Introduction: earlier Western prejudices against sovereign wealth funds

In 2007–08 sovereign wealth funds (SWFs) came into the limelight, triggering a flurry of academic papers. SWFs surged both in number and size of assets under management, reaching US$3.05 trillion in 2008 according to the first Preqin Review. This rise to prominence was due to the commodity price supercycle and the so-called global imbalances of the mid 2000s. It immediately caused alarm in both the academic community and the political establishment of Western countries.

Since that time SWFs have developed and have been accepted by the community of institutional investors. Their total amount of assets under management has reached $5.38 trillion in 2013, a gain of $750 billion in additional assets since 2012. This growth has occurred via creation (eg Western Australian Future Fund created in December 2012), net capital allocations by the states and profitable investments by these funds.

In 2008 academic papers were not very interested in understanding what SWFs were all about, how they were legitimate, what their intent was and how their governance was structured. Most of them took a normative view, pretending that SWFs should behave like ordinary financial investors in an efficient market. SWF were to be denied any strategic role and have no other purpose than maximising financial wealth through optimal diversification.

Furthermore this uproar arose in the depth of the financial crisis without the papers even mentioning it. The psychological shock occurred in late 2007 when SWFs entered the capital of the finest Wall Street investment banking firms, then in distress. Suddenly the arrogant tycoons in the nexus of financial capitalism felt threatened in their hegemony. Something had to be done.

Academics working as financial advisors were called upon to build defensive arguments that would deprive the intruders of controlling rights. What should be done and what should not be done were spelled out without any consideration of the financial crisis, though it was invalidating the efficient market hypothesis that allegedly justified the normative predicament the authors wanted to impose. Meanwhile political pressures led both the US government and the European Commission to negotiate a good conduct code that could be acceptable to all parties. Indeed, in a financial climate praising free capital movements, targeted discriminations against SWFs that might limit their freedom to invest would be a bad signal indeed.

In April 2008 the Washington-located Peterson Institute issued a blueprint for SWF best practice that was a compendium of a priori prejudices and that has a peculiar flavour
Sovereign wealth funds in the mutation of global finance

given the financial crisis was to reach its climax only five months later. To justify its recommendations the Peterson Institute raised five major “concerns”.

1. Governments may mismanage international investments. Presumably the private sector always invests optimally. This was bluntly asserted in the midst of the subprime crisis!

2. Governments may manage their investments in pursuit of political objectives. Presumably the “extravagant privilege” of dollar status financing cheaply the purchase of assets everywhere in the world is not a strategic behaviour!

3. SWF owners may use the funds to promote financial protectionism in host countries against the interests of the financial community as a whole. This is a logical conclusion stemming from the dogma stating that allocations under a free capital market are always optimal.

4. SWFs may contribute to market turmoil and uncertainty. Remember that this was raised after Bear Stearns’s failure and at the time when the mortgage credit market was deteriorating fast and leading Fannie Mae and Freddie Mac to bankruptcy!

5. Conflicts of interests might arise in principal agent relationships. This is absolutely general in finance. Why should it give rise to specific restrictions against SWFs?

However, the concerns, as alarming as they might be, faced problems in being transformed into actual guidelines. It was left to the International Monetary Fund (IMF) and the Organisation for Economic Co-operation and Development (OECD) to define loose codes of good conduct for SWF managers on the one hand and for recipient countries of SWF investments on the other. After a round of meetings between the concerned parties, the IMF issued Generally Accepted Principles and Practices (GAPP) in the fall of 2008. These were supposed to work as a voluntary code of conduct. Meanwhile the OECD was trying to define a code of good conduct for recipient countries. This is a very general and vague statement. Host governments remained free to attach any meaning that suited them for “essential security interests”. Without a common definition of national interest and no procedure to resolve disputes the matter was left out of international law.

There are good reasons why the issue was left indeterminate. The views summed up in the five concerns reveal the paranoia that seized Western policymakers and politicians at the time. SWFs have a bad reputation in the West simply because they are vehicles of a shift in wealth worldwide against the predominance of the West, and also because they herald a redistribution of the wealth from the private to the public sector. These are the telluric forces that are reshaping the world economy and that must be understood prior to defining the nature of SWFs and their future development. They are objective processes that make SWFs entrenched and inescapable entities in the realm of international financial investment.

These prolegomena give the structure of the paper. In the second section the reasons why the business model of SWFs is not the same as those of other institutional investors, even if they have common features, are outlined. In the third section it will be explained that the financial crisis has invalidated the efficient market hypothesis that underpins the principles of portfolio management. In the fourth section it will be argued that the way financial globalisation has developed in the three decades prior to the financial crisis is receding. An overhaul of financial globalisation is under way to respond to the needs of massive long-term investments in which SWFs might play a prominent role. The objectives and techniques of a new model of finance, suitable to the needs and responsibilities of long-term investors, will be sketched. The fifth section will point out how SWFs and other long-term investors might prosper in the new pattern of world growth. It will take issue with financing innovation in emerging market countries and discuss the redeployment of production structures to sustainable growth using China as an example. Finally, the sixth section will conclude.

B. The business model of sovereign funds

Long-term investors are not necessarily the type of investor they purport to be. A common they have is not to be constrained by unforeseen liquidity needs; this makes it easier for them than other financial intermediaries to hold illiquid or less liquid assets. However, it is not enough. The benchmark of long-term investors is the liability side. All long-term investors indulge in asset liability management (ALM). Defined-benefit pension funds and insurance companies are long-term institutional investors because they have fiduciary duties on their contractual liabilities towards their individual customers, which are legal. Their long-term objective is a long-term real return high enough to immunise their contractual liabilities (to be able to pay the contractual flow of income over the life of the contract). Therefore the motive of those investors is pecuniary.

SWFs are not the same type of investors, neither are endowment university funds, nor government reserve funds, nor family offices (pooled family saving run as a single fund). All those institutions are perpetual funds. Therefore they are long-term investors in principle. They are distinct from one another in terms of their liabilities. What are the liabilities of SWFs? They are liabilities to the nation through the sovereign institutions of the country, most often the government. The wealth in the balance sheets of SWFs is owned by governments. It follows that people who pretend that SWFs should invest on strictly pecuniary motives will be led astray. Like all long-term investors, SWFs are established to transfer wealth from the present to the future. But unlike contractual investors, their liabilities must be understood more broadly. They participate to the sustainability of the public finances of the nation over time. They are linked to the budget of the government through two-way transfers: feeding the revenue of the government and obtaining capital inflow from the government. Therefore it is absurd to pretend that SWFs should not resort to strategic actions. They are strategic by their very nature.

In accounting terms, the balance sheets of SWFs are connected to the balance sheets of the public sector of the nation. In those dual balance sheets, some items are contingent claims and liabilities. This line of thinking departs from traditional portfolio diversification methodology applied mechanically.
Sovereign wealth funds in the mutation of global finance

to SWFs. The linkage between public sector and SWF accounting can be drawn up the following way (see Table 1).

<table>
<thead>
<tr>
<th>Items</th>
<th>Government</th>
<th>SWF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal assets and liabilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net present value of future taxes</td>
<td>Net present value of future transfers from SWFs</td>
<td></td>
</tr>
<tr>
<td>+ transfers from SWFs</td>
<td>(incl transfers to SWFs)</td>
<td></td>
</tr>
<tr>
<td>Financial assets and liabilities</td>
<td>Equity capital in SOEs</td>
<td>Gross public debt</td>
</tr>
<tr>
<td>Other financial assets</td>
<td>Equities</td>
<td>Bonds</td>
</tr>
<tr>
<td>Real assets and public wealth</td>
<td>Real estate assets</td>
<td>Net wealth of the public sector</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>Total</td>
</tr>
</tbody>
</table>

Governments have multiple and changing objectives over time. They react to innumerable and unexpected number of shocks and social tensions. Therefore they maximise nothing. However, for the state not to fail, the government must keep its public finance sustainable. The condition is that the net wealth of the public sector does not decrease over time, if wealth is to be transferred to the future, so that the welfare of the whole population increases. This condition must be satisfied by overall macroeconomic policy. Depending on the relation between the growth rate ($g$) and the average real interest rate paid on the gross public debt ($r$), the government has the leeway to run a primary deficit ($g < r$) or must generate a primary surplus ($g > r$).

This is where SWFs enter the picture. They are agents of governments. Therefore they do not have an independent preference function. They should try to achieve a long-run risk-adjusted real return $r$, so that governments have reason to transfer revenue to SWFs in order to increase their capital. The objective is to get revenue from the SWF in the future higher than the taxes the government can expect to collect, had not it transferred capital to the SWF in the beginning.

The long-run equilibrium benchmark of SWFs being well-defined for a given fiscal policy of the government, two questions arise to define the business model comprehensively. Upstream, what are the political relationships between governments and SWFs, so that the business model of the latter is legitimate to the population? Downstream, what is the method of ALM appropriate for SWFs? Let us start with the latter.

1. Diversity of sovereign wealth funds

There are different types of SWFs depending on the nature of the resources that are transferred to them. Investment strategies depend on those liabilities. Some SWFs are only foreign exchange reserve funds set up for stabilisation purpose. They play the part of stabilisation departments of central banks. They submit to liquidity constraints. Others, such as the China Investment Corporation (CIC), get their resources from excess foreign exchange reserves. The stabilisation function of the currency is done by the SAFE (foreign exchange department of the People’s Bank of China). The CIC has the mission to invest mainly abroad and to take risk in order to get higher return than a stabilisation fund. It is interesting to observe how the CIC has reacted to the financial crisis.

The CIC was created in 2007 with a first allocation of $200 billion. In 2012 it received $150 billion more. Total assets under management at end-2012 amounted to $482 billion. The CIC is a holding company with two branches managing two different types of funds. The first branch invests yuan-denominated funds that add up to the allocation of capital from foreign exchange. They come from assets held by the state in financial institutions. Their management is delegated to the Bank of China (BOC). The second branch is the CIC per se. It invests offshore in foreign currencies. The CIC aims at high returns on investment ≥10%, but not high risk so that it can expect a relatively steady long-term return.

Until mid-2011 the CIC invested mainly in financial institutions. This is how it suffered heavy losses from equity investment in Blackstone and Morgan Stanley in the early days of the financial crisis. In the last two years it has diversified in three domains: energy, infrastructure and new technologies. In energy the CIC has a mission to contribute to the security of China’s supply of energy (nuclear and renewable on top of oil and gas) and minerals. In new technologies it targets companies that are in the later stages of development close to or in commercialisation, not the early stages of R&D projects.

Geographically the CIC has largely retreated from the US in favour of a core business in Asia to participate in the goal of East Asian integration. Other areas of activity are Central Asia and the Asia Pacific (Australia and Indonesia). In Europe the CIC is active in distressed Southern Europe countries, buying back long-term public debt and investing in infrastructure. Finally some funds are strictly sovereign pension funds. They manage reserves held by government-run public pension funds where assets are earmarked for payment of current and future retiree benefits. It can be an intentionally funded pension scheme (eg National Pension Reserve Fund of Ireland) or a transitory reserve fund (eg French Fonds de Réserve des retraites).

Most SWFs are set up based on natural resources in countries exposed to unpredictable revenues due to unexpected primary commodity changes. Because international insurance markets are quite incomplete, self-insurance is the most rational choice for producer countries. Hence certain oil-exporting countries set up SWFs a long time ago: the Kuwait Investment Authority dates from 1953, the Abu Dhabi Investment Authority from 1976 and the Norway Government Pension Fund—Global from 1990. All of them and many others
aim at converting flows of revenue from exhaustible natural resources into diversified assets that will be able to sustain streams of income in the long run for future generations. This rationale is also the same for non-commodity SWFs such as the two Singaporean funds: Temasek Holdings set up in 1974 and Government of Singapore Investment Corporation in 1981. Both obtained their capital from the transfer of persistent fiscal surpluses due to high national savings. On top of the long-term goal of intergenerational equity, this type of SWF can promote fiscal stability in transferring profits to the government in times of low tax receipts due to downturns in the economic cycle.

In Norway integration with the budget is quite institutionalised. The long-term target real return is 4%. This benchmark gives guidance to how much the government should spend of the proceeds generated by the Fund. The proper amount is transferred to the general budget. Spending rules should be flexible to be ready to deal with any large unexpected shocks that might arise.

ALM is not often explicitly displayed and discussed. Portfolio management goals are not usually linked to obligation streams. However, investment risks must be controlled along with expected economic costs of providing the promised future income or explicitly promised pensions. What can be said about best practices?

2. Asset-liability management principles for sovereign wealth funds

The background model for ALM has been described by Sharpe and Tint. The basic principle is the following: liabilities of institutional investors, either contractual from individual savings or transferred from the government as collective savings, are negative assets for the institutional investor. Conversely any alternative asset, yielding a quasi-rent and bearing extra-financial risks, is equivalent to a negative debt.

The diversifiable portfolio must be allocated by the institutional investor so as to hedge the risks of the liability side and to offset the extra-financial risks invested in alternative assets in order to optimise its net wealth, or at least keep it sustainable over time. Liabilities with positive covariance with assets are ipso facto a debt hedging the asset. Because liabilities rest on social commitments for pension funds or commitments towards the sovereign for SWFs, the discretion to manage lies in the asset side. The asset portfolio must be managed to hedge the liabilities. Therefore the optimal portfolio, admitting that it exists, or at least the most satisfying portfolio, is quite different from the portfolio that one might have constructed without the positive or negative correlation between assets and liabilities.

Posit \(A\) the total value of assets and \(L\) the value of liabilities, meaning the net present value of future expected payments to the government. \(S = A – kL\) is the surplus if \(k\) is the weight the fund manager grants to the likelihood to make future payments on her liabilities. \(k = 1\) is the full optimisation of the surplus, \(k = 0\) is a standard management that does not take care of the liability side. \(T = 0\) is the present, \(t = 1\) is the future. Random future values are indicated by a tilde, \(\sim\). The program of the fund manager is:

\[
\text{Max} \tilde{S}_t \approx \text{Max} \left\{ \frac{\tilde{A}_t}{A_0} - k \frac{L_t}{A_0} \frac{\tilde{L}_t}{L_0} \right\}.
\]

Define the yields on assets and the cost of liabilities:

\[
1 + \tilde{R}_A = \frac{\tilde{A}_t}{A_0}
\]

and

\[
1 + \tilde{R}_L = \frac{\tilde{L}_t}{L_0},
\]

so that the surplus is:

\[
\tilde{Z} = \tilde{R}_A - k \frac{L_0}{A_0} \tilde{R}_L.
\]

Let us suppose that the manager uses a standard utility function:

\[
\text{Max} U = \text{Max} \left\{ E_0(\tilde{Z}) - V(\tilde{a}\tilde{Z}) \right\}.
\]

Retaining only the terms that influence the allocation of assets (the manager has no control over its liabilities and the commitments they encapsulate), the program is finally the following:

\[
\text{Max} \left\{ E_0(\tilde{R}_A) - aV(\tilde{R}_A) + 2ak \frac{L_0}{A_0} \text{cov}(\tilde{R}_A, \tilde{R}_L) \right\}.
\]

The first term in brackets is the standard risk/variance model. The second term is the hedging of liability risks. It is effective if the covariance between the return on assets and the cost of liabilities is >0. The higher the covariance, the more robust is the portfolio in immunising the liabilities. Conversely, if assets are chosen so that the covariance is <0, the portfolio is unstable because the value of the surplus diminishes as long as liabilities increase.

Note that the model applies to alternative assets because non-diversifiable alternative assets are akin to liabilities. Let \(G\) be the uncertain value of alternative assets. They are valued either in-house or by specialised experts. Depending on how the diversifiable portfolio is structured, \(G\) results in the hedging of a negative debt or an excess risk (SUR). At \(t = 0\) the excess risk is:

\[
\text{SUR} = 2ak \frac{G_0}{A_0} \text{cov}(\tilde{R}_A, \tilde{R}_G).
\]

It is an excess risk premium that must be deducted from the expected risk of the diversifiable portfolio (a mix of shares and tradable bonds) to compute the contribution of the portfolio to the global welfare which the SWF participates to.

With the same notation as above, the program is:

\[
\text{Max} \left\{ E_0(\tilde{R}_A) - aV(\tilde{R}_A) - 2ak \frac{G_0}{A_0} \text{cov}(\tilde{R}_A, \tilde{R}_G) \right\}
\]

indicating the proportion of marketed equities the investor must hold in its diversifiable portfolio when she invests in alternative assets. Let \(\gamma\) be her relative risk aversion. The stochastic return on equities has an expected yield \(\mu\) and a standard deviation \(\sigma\). The alternative asset has stochastic char-
characteristics $r_e$, $\sigma_e$ and $\sigma_{gw}$ for the covariance with the tradable portfolio. Because alternative assets are negative debts, equities can be an hedge if $\sigma_{gw} < 0$. Finally $\rho = W/G$ is the reverse of the share of alternative asset value in total wealth. The optimal proportion of equities in the optimal tradable portfolio at time $t$ is:

$$\lambda_t = \frac{1}{\rho} \left( \frac{\mu + \sigma_w^2}{\gamma \sigma_{gw}^2} \right) + (1 - \frac{1}{\rho}) \left( \frac{\sigma_{gw}^2}{\sigma_w^2} \right).$$

The proportion of bonds is $1 - \lambda_t$. The portfolio is entirely determined.

The interesting conclusion is that alternative assets come first. The optimal allocation can be determined only if the variance of the bundle of alternative assets and the covariance with tradable assets are computable and make sense as estimations of risk. Usually those conditions are not satisfied. However, long-run real investments are fundamental determinants of catching up and convergence in emerging market economies (EMEs). The non-financial risk characteristics of those assets are non-Gaussian and largely non-computable. They belong to what Keynes called uncertainty. This is why theorists using the crude Markowitz framework are clearly wrong in applying it to SWFs whose concern with alternative assets is the primary focus. Therefore the question that is impossible to bypass is: what to do practically? Are there workable guidelines?\(^19\)

The first immeasurable risk is the risk of illiquidity of alternative assets. It can be mitigated or at least made bearable for investors with small liquidity needs in proportion to the size of their assets. However, it makes SWFs unfit with financing startups, new SMEs in their developing stage. Public guarantees, techniques of risk sharing and new financing instruments will be needed for their participation in investment drives via private equity (PE) firms. SWFs invest in hedge funds (HFs) and PE funds, they indirectly bear the credit risk due to the usually high leverage of those shadow banks, on top of the illiquidity due to lock-in periods they impose on their investors. Investing in HF and PE funds exposes SWFs to asymmetric bias (skewness) and a thick tail of probability distributions (high kurtosis) – risk profiles of which SWF managers are not too often.

The way to manage these intricate problems is to rely on governance in setting up a dual core satellite structure. The core must build up a portfolio to immunise the fund’s liabilities the manager is committed to fulfil. The management must carefully assess the time profile of the liabilities and choose a portfolio of tradeable assets that makes the most of a positive covariance with liabilities. Investment in alternative assets and imperfect hedging portfolios must be left to satellite accounts and financed by other sources of capital than the ones whose returns are committed to fiscal regulation. The dual structure makes it possible the build-up of a time-flexible strategy.\(^20\)

A time-flexible strategy should not be based on asset classes but on risk factors to focus as much as possible on the forces that drive the variations of risk premiums. Indeed, assets are bundles of risk factors, both market and non-market risks. Factor analysis is more suitable for active management than market-weighted indexes relying on asset classes. The need to shift the focus increases with the importance of alternative assets. Because of externalities in the interdependencies in the structure of risks, as shown in the above model, risk factor analysis must be embedded in an integrated policy framework. However, the governance can raise difficult problems of accountability. This is why the business model must be completed by a higher level of political legitimacy toward the sovereign.

3. Integration of sovereign wealth funds into the national political framework

The Norwegian Government Pension Fund-Global is one of the most successful in the world. Norway is the country that has made most explicit, not only its characteristics of portfolio building but also the principles of its governance. This is why it is good practice to build on this experience.\(^21\) Governance and performance of the Fund belong to the theory and practical considerations presented above. Consideration of dimensions has been superseded by two more fundamental ones: legitimacy and integrated policy.

Quoting Ang, “legitimacy ensures that the capital the SWF is entrusted for is gradually disbursed across present and future generations”. SWFs are established in the public interest to eschew the mismanagement of national wealth. Natural resource wealth tends to provoke “Dutch disease” leading to unsustainability if the exhaustible wealth is not properly substituted with profitable sources of wealth in the long run. The quasi-rents from externalities can easily give rise to corruption and appropriation of wealth by vested interests. Lack of fiscal discipline can lead to runaway diversion of production capacities and inflationary pressures. To avoid such evils, legitimacy is paramount. It is essential to ensure that the general public and the governing party or the authority, whatever the political regime, understand and support the purpose of the SWF. Therefore legitimacy is more than preserving capital. It allows SWFs to experience losses without their existence being threatened.

To be maintained, legitimacy needs well-developed political institutions. The rule of law is necessary but not sufficient. Legitimacy must be rooted and sustained in society itself. Legitimacy can be established in countries of all political hues. For instance, it is well established in Norway but also in Singapore. In Norway transparency helps setting clearly and simply the goals of the Fund because socially conscious people can understand the decision-making rules. The Ministry of Finance is directly responsible for the Fund and reporting to Parliament. The fund is managed by the Norges Bank Investment Management, a subdivision of the central bank. Delegation mandates to outside asset managers are few and confined to narrow equity investments, in particular EMEs where specialised expertise is needed.

But transparency is neither necessary nor sufficient to achieve legitimacy.\(^22\) A few non-democratic countries (in the Western sense of the term) have set up legal, political and economic structures to ensure the longevity of the SWFs. It can be achieved if the entire system makes it hard for the governing authorities of the fund to diverge from the original goals. In Singapore the performances of the funds
Sovereign wealth funds in the mutation of global finance
are deliberately opaque to the financial markets. Published reports are rare and individual asset holdings are unknown. However, the SWFs enjoy deep support from the people and play a paramount role in the financial policy of the country. The principal agent relationship is very robust. Fund managers are responsible for their actions at every hierarchical level. They regularly report to government and are supervised by an independent board comprising most senior politicians.

Legitimacy is based on an integrated policy framework that helps sustain the long-term nature of the fund’s goals and its ability to transfer wealth over time. A well-designed institutional system makes it possible to define clearly the role of SWFs in the policy framework of the nation. SWFs are not SOEs, even when they hold their shares. They are not directly involved in the sectors in which the companies invest. Therefore they are not, and should not be, majority investors tied to particular companies. Unfortunately this is often what happens in the oil and gas industries. When their resources come from foreign exchange reserves, they should not be currency stabilisers. Replacing the central bank in this role would blur their long-term goals in getting involved in short-term arbitrages. More generally SWFs should not be direct tools of government policy. They contribute to the sustainability of the budget but should not be involved in political arbitrages over taxes and subsidies. According to Ang, if the fiscal transfer from SWF to the general budget is rule-based, it gives guidance about how much of the proceeds generated by the fund the government can spend. However, spending rules may be made flexible enough to meet large unexpected shocks. The reasons for flexible rules are better understood, thus better accepted, in risk-factor investment strategies. It will avoid time-inconsistent policies giving rise to precipitous changes that are often ruinous.

As we have demonstrated above, the balance sheets of SWFs are complex and embody assets whose risks are generated by externalities that are not measurable in the standard risk-return model. This is why they are not assigned to peculiar profit-maximising benchmarks. They need a long-run target return. But, in the dual core satellite governance structure, they can choose non-profit maximisation goals for part of their portfolios. Once more, what is crucial is the definition of their proper role is an integrated policy to sustain legitimacy.

At a lower level of governance, achieving internal efficiency in the organisation is all-important. This is why the expertise must be gathered in-house as much as possible. The selection of managers and the specification of performance benchmarks for them should be carefully supervised by the fund’s governing body.

In the above review a holistic approach of SWF investment strategies has been advocated to achieve a long-run equilibrium target return. Nothing has been said on the long run. However, all financial investors and governments face a huge challenge. The post-financial crisis in the long run will not see the restoration of the past 30 years of global finance. A regime change is occurring in the world economy. It will dramatically impinge upon the types of investment, the way it will be financed, the organisation of financial systems. How will SWFs adapt to the new world? This is what will be investigated in the next two sections.

C. Sovereign wealth funds and the financial cycle

It has already been noted that portfolio allocation is affected by financial market incompleteness and by externalities generated by alternative assets that induce correlations difficult to assess with tradable debt securities and equities. However, long-term asset allocation is plagued by far deeper problems that may explain why there are so few long-term investors. Because risk factors are not independent over time, investors with long-term horizons are time dependent. Pitfalls in dynamic asset allocation ensue when risk factors are not independent and identically distributed (IID) over time. How should strategic portfolios be structured and how should they evolve over time when the pattern of risks is not IID?

1. Mean reversion and the preference for risky assets

The assumption drawn from the theory of efficient markets is the common knowledge of the fundamental values of assets. Fundamental values are supposed to be exterior to the markets, eg determined by real factors of productivity, consumer preference and demography. Therefore rational investors use them as benchmarks in a mean-reverting way. Mean reversion makes financial markets stable since stabilis-
Sovereign wealth funds in the mutation of global finance

The fundamental reason is the following: if mean-reversion is the dynamic law of markets, asset returns are less variable over longer horizons than over shorter ones. Standard variations of equity and bond returns decrease over time, contrary to short-term securities. Furthermore, the correlation between bonds and equities increases in the short run, but decreases in the long run (Figure 1).

The reason for this pattern is clear. As the consequence of time dependency, the risk premium on risky assets is not only a function of the covariance of returns between these assets and the whole portfolio (as in a standard Markowitz model), but also of the covariance between the return of the risky asset and the revision of expectations on the future return of the portfolio. With mean-reversion the latter covariance is negative and allows for inter-temporal hedging that long-term investors can build. Therefore, the proportion of equities is systematically higher than the one for short-term investors (Figure 2).

The tactical allocation is the one of a short-term investor who only observes the state variable $x_t$. If the yield is 0, there is no equity in the portfolio. If it is equal to the average yield $\mu$, the allocation coincides with that of a buy-and-hold investor. The strategic investor makes allowance for the inter-temporal hedging due to mean reversion. Consequently, the proportion of equities is always higher. It is $>0$ even if $x_t = 0$. It increases with $x_t$ systematically faster than the tactical allocation (Figure 2).

Everything in this theory depends on the exogenous assumption of a fundamental value logically prior to the working of the market, a "true value" that the market only reveals through asset trading. What happens if fundamental values do not exist? If instead of mean reversion, markets are driven by momentum? If risk aversion is not an exogenous phenomenon but is endogenously determined by the momentum? These questions arise from uncertainty that is ignored by the efficient market hypothesis. This is the problem of the financial cycle, which impinges heavily on investors' behaviour.

2. The financial cycle and the macro-economy

A key feature of financial dynamics under uncertainty is that momentum, not mean reversion, drives asset market prices. Momentum means that price trajectories over time proceed from self-reinforcing interactions between perceptions of waxing future values and diminishing risk aversion. Mean reversion is not embedded in investors' strategies. It arises as an historical phenomenon over financial cycles lasting 15–20 year through booms and busts (Figure 3). Because the financial cycle has a much longer timespan than the decision-making horizon of both market participants and policymakers, it is beyond their ability to adjust to the nature of financial instability. This is why procyclicality is a key feature of macrodynamics. When dynamic is driven by momentum, imbalances accumulate in stocks of assets. Stock disequilibria persist in asset value/GDP and debt/GDP and impinge upon flow variables (net credit/GDP) both in the upward and downward phases of the financial cycle (Figure 3).

The financial cycle is measured by the evolution of an index combining private credit growth, credit/GDP ratio and house price variations; the business cycle is measured by the

---

Figure 2. Proportion of equities in portfolio as a function of investment opportunities.

Figure 3. The financial and business cycles in the US.

variations of the output ratio. Both cycles differ widely in frequency (16–20 vs. 5–8 years) and in magnitude. Because the financial cycle lasts much longer than the business cycle, there are unfinished recessions (like the 2001–02 recession occurring while the credit-induced asset price momentum was in full swing). This is the time for major errors in monetary policy. However, one can see that the financial cycle was subdued in the era of the so-called financial repression. It means that, unsurprisingly, the financial cycle depends on financial structures. The latter co-determine financial dynamics and monetary regimes.27

In an era of financial repression (1960s and 1970s) the macro disequilibria inherent to capital accumulation become apparent in inflationary spirals and are dealt with by quantitative monetary policy. The business cycle is larger in amplitude than the financial cycle, which is subdued. In an era of financial liberalisation (1980s onwards), inflation is subdued and disequilibria accumulate in balance sheets and are manifest in magnified financial cycles. Standard monetarist doctrine loses pertinence entirely in the latter era. The so-called great moderation boasted by central bankers is the screen behind which they have left the financial momentum feeding on itself.

The financial cycle is global while macro-economic cycles are national. Therefore the disconnection over time in the span of both cycles is doubled by a disconnection over space. The momentum of the financial cycle drives the leverage of international banks, cross-border capital flows and the growth of credit. It moves asset prices and exchange rates.

Financial intermediaries have every reason to bid aggressively for collateral appreciates from the momentum and because their value-at-risk models that deal with risk as if it were IID. Therefore the distance to default looks higher with account of their strategies on those historical asset values. Therefore rising leverage, accelerated credit growth and asset price surge are closely linked.31

Financial intermediaries borrow their funding in the wholesale money market against collaterals, which are the speculative assets themselves.30 Because the value of their collateral appreciates from the momentum and because their funding horizon gets shorter as long as the dynamic of Figure 4 is in full swing, shadow banks have an interest in staying in the bubble. With mark-to-market valuation, market intermediaries are incentivised to increase their leverage to lend to all investors entering the asset markets because they are attracted by price appreciation. Therefore rising leverage, accelerated credit growth and asset price surge are closely linked.31

Financial intermediaries use value-at-risk models that point out that risk is decreasing as long as the value of their collaterals increases faster than the value of their own liabilities. Therefore the distance to default looks higher with accounting devices and models that deal with risk as if it were IID. Financial intermediaries have every reason to bid aggressively to extend more credit to investors and advise them to buy inflated assets. They lure investors with cheap credit since their risk control models teach them that risk is decreasing. It follows that credit spreads do not rise with the explosion of credit. Indeed, one of the most spectacular features of the huge credit expansion that financed the real estate bubble in 2003–06 was the shrinking in spreads! It was going to appear which direction? What is the behaviour of financial investors that makes them capable of giving rise to risk profiles so far away from the teachings of standard financial theory?

3. From efficient market hypothesis to intrinsic financial instability hypothesis

The self-fulfilling dynamic in the expansive phase of the financial cycle is depicted in Figure 4. One can see that all the dynamic relations are reinforcing the surge of asset prices. There is no mean-reverting countervailing force capable of regulating asset valuation. The market determines asset values through its own dynamic without any exogenous benchmark playing the role of an anchor. The average prices of assets are ex post historical means that are revealed over decades. Unless investors have a very long view, have no obligation to pay any income to their owners or can delay income service and bear unrealised losses for long periods of time in the downside phase of the business cycle, they will not be able to shape their strategies on those historical asset values. Therefore the question is: are SWFs candidates to be those very long-term investors? The Norwegian Pension Fund–Global boasts of having a 100-year horizon and of having deliberately bought equities in the depth of the financial crisis. I am not sure that the CIC and the UAE fund managers who bought shares of US investment banks in the fall of 2007 did it with the financial cycle in mind!

Figure 4 displays the logic of the momentum. It is driven by shadow banks (HFs and PE funds) and broker dealers that are financial market intermediaries. Long-term investors nurture the whole process in investing blindly in shadow banks and in delegating their bond and equity investments to outside managers. They magnify the momentum in fostering the competition between managers, based upon quarterly financial report. These are very far removed from long-term strategies!

Financial intermediaries borrow their funding in the wholesale money market against collaterals, which are the speculative assets themselves.30 Because the value of their collateral appreciates from the momentum and because their funding horizon gets shorter as long as the dynamic of Figure 4 is in full swing, shadow banks have an interest in staying in the bubble. With mark-to-market valuation, market intermediaries are incentivised to increase their leverage to lend to all investors entering the asset markets because they are attracted by price appreciation. Therefore rising leverage, accelerated credit growth and asset price surge are closely linked.31

Financial intermediaries use value-at-risk models that point out that risk is decreasing as long as the value of their collaterals increases faster than the value of their own liabilities. Therefore the distance to default looks higher with accounting devices and models that deal with risk as if it were IID. Financial intermediaries have every reason to bid aggressively to extend more credit to investors and advise them to buy inflated assets. They lure investors with cheap credit since their risk control models teach them that risk is decreasing. It follows that credit spreads do not rise with the explosion of credit. Indeed, one of the most spectacular features of the huge credit expansion that financed the real estate bubble in 2003–06 was the shrinking in spreads! It was going to appear

Figure 4. Positive feedbacks in the upward phase of the financial cycle.
later as a gross undervaluation of risk when the price of risk jumped with the reversal in asset prices. However, investors can build portfolios that mitigate losses when the systemic crisis has been striking.32

The theoretical analysis shows that risk accumulates in the euphoric stage of the financial cycle but stays hidden in vulnerabilities that are not accounted for: counterparty risk in obscure chains of over-the-counter risk transfers through conduits and special vehicles created by investment bankers to hide their true exposition, liquidity risk as much as the wholesale money market is financing longer maturity mismatches, credit risk that will become systemic while asset prices crash.

The question is now the following: since the market has no inbuilt stabiliser when it is enslaved in its momentous logic, who are the actors in the financial system with opposite interests and enough stamina to counter the dominance of international investment banks, so that the financial cycle can be moderated?

One possibility is the development of macroprudential policy to stem the buildup of financial vulnerabilities in standardising derivatives markets, making central settlement compulsory and using countercyclical devices (variable capital requirements for systemic financial intermediaries, variable reserve requirements and liquidity ratios for banks, limits of loan-to-value and loan-to-income for non-financial borrowers in real estate markets).33

Another possibility is the existence of a group of true long-term investors, large enough in aggregate size and not dependent on leverage themselves to exert countervailing power in financial markets. They should have strong in-house management in both asset allocation and risk control and ALM models based on risk factors. They should have a horizon long enough to see through the financial cycle. Can SWFs have incentives to transform their business models to exert discipline on their shadow bank partners and generate some mean-reverting forces in tradable markets? Surely not those that are focused on fiscal stabilisation. They will hold large inventories of low-risk government debt. However, they make no more than 10% of total assets of SWFs. Other types of SWFs can in principle finance more long-term real investments. Will they? To try answering this question, one must appraise the post-crisis transformations in financial globalisation and the world economy.

**D. Transformation of long-term finance and economic growth: the state is back**

In its 2010 report “Shifting Wealth” and the 2012 update, the OECD made an important contribution to understanding the transformations of the world economy. The report discards the fashionable dichotomy between advanced and emerging economies and the even more outdated North/South. In a problematic focus on the long-run evolution of the wealth of nations, the report distinguishes four groups of countries: affluent/converging/struggling/poor. Countries are converging if their growth rate is growing at least twice faster the average growth rate of affluent countries on a 20-year timescale. What distinguishes converging and struggling countries is not the ability to grow fast. It is macroeconomic robustness that eschews large macroeconomic fluctuations. It shows the shift in the distribution of wealth since 2000. This shift in wealth is an opportunity for the world economy. Most important for future growth drivers, shifting wealth is changing with the stages of Chinese reform.

The first stage of shifting wealth has triggered the notorious acceleration of world growth cum great advance in financial globalisation and world trade. In 20 years up to 2008 world trade multiplied 4-fold and trade between non-advanced countries 10-fold. This epoch was driven by Chinese and Indian openings, which brought 1 billion people onto the world labour market, about 40% of the whole labour supply. Redeploying labour created the Chinese manufacturing basis that launched the commodity-intensive growth, which benefited resource-exporting countries in Africa, the Middle East, Latin America, Australia and Canada.

The second stage of shifting wealth is linked to the first Lewis turning point in China, which provoked a trend growth in real wages and in the real exchange rate of the renminbi. The structural change in relative prices induces transformation in the capital structure towards investments in intangibles (human capital and R&D). This change in the supply side is matched by a rebalancing on the demand side from export-led growth to the domestic economy. Worldwide the middle class will double from 2 to 4 billion people between 2012 and 2025. This will support a massive urbanisation drive that will shift the dynamic of consumption towards converging countries while some struggling countries will enter the more glamorous category. Urbanisation preserving or restoring ecosystem services will require enormous investments in non-OECD countries. The World Bank estimates the needs as $1 trillion per annum to 2020.34 Those needs vastly outstrip available long-term financing. To meet the challenge an overhaul of the channels of financial intermediation is urgently needed.

1. **Spreading vulnerabilities in post-crisis financial systems: retrenchment of European banks and need of a new business model in banking.**

The new financial landscape constraining the supply of finance in the long run proceeds from both the aftermath of the financial crisis and from broader trends. These trends include bank deleveraging and new prudential regulation, fiscal consolidation in affluent economies restraining public investment in infrastructure, research and education, and the ageing of populations inducing institutional investors to shift to lower-risk assets, which increases the cost of equity.

The consequence of the financial crisis is the most spectacular because it has led to the fragmentation of the European financial system. European banks were used to borrow dollars on the wholesale money market via their US branches and subsidiaries and redistribute the liquidity worldwide. After the crisis bank vulnerabilities have provoked the retrenchment of European banks that used to make cross-border intermediation, which largely financed the foreign operations of EMEs. This has led to a void in the financing of investments in EMEs, a not inconsiderable contributor to the growth slowdown in non-OECD countries.35
European banks suffer from depressed market valuation that makes raising capital on the stock markets costly or plainly impossible. This is due to excessive leverage, weak earnings and inadequate capital buffer. It should not be forgotten that doubling the equity/assets ratio from 2.5 to 5% lowers the cost of equity by 80bps. European banks are too dependent on wholesale funding because their ratio of illiquid credit/retail deposit was about 130%. When the wholesale money market imploded with the withdrawal of money market funds and mutual funds, the banks in Southern Europe were on the verge of collapsing and threatened their counterparts in the eurozone. The €1 trillion LTRO engineered by the European Central Bank (ECB) weathered a vicious credit crunch in substituting for the paralysed money market, but it could not solve the balance sheet problem. Furthermore, bad management has worsened the problem. Under the pressure of their shareholders, a number of large banks have kept dividend payments at pre-crisis levels, thus impairing their capital base. This is due to the corporate governance model called shareholder value, which induces myopic behaviour. It straightforwardly runs counter to banks' long-term robustness that implies converting retained earnings in equity and earmarking bonds to bail-in according to Basel III requirements. European banks must shrink their balance sheets by $2.6 trillion (about 7% of bank assets) in the aggregate, according to IMF estimate, for both cyclical and structural reasons, the latter accompanying a change in their business model. As long as banking union has not been safely established, the best way to deleverage is in retrenching behind national borders. What has to be sacrificed first is international banking intermediation. The $2.6 trillion might be broken down into $2.0 trillion in asset sales and interbank lending, $0.2 trillion in asset sales and interbank lending, $0.2 trillion in eurozone credit and $0.4 trillion in credit to the rest of the world.

The decline in foreign assets of European banks is quite visible in their reporting to BIS. The process has already lasted almost six years since Q1 2008 (Figure 5). How will EMES be impacted? Their resilience depends on the magnitude and speed of bank deleveraging in Europe, which will trigger capital outflows. Another round is likely to arise after mid-2014 when the extent of bank losses and capital shortage will be revealed after ECB’s asset review of 130 banks.

Emerging Europe and to a lesser extent Africa are the most vulnerable regions. Emerging Europe has the tightest banking links to eurozone banks and the largest external financing needs. They also have the smallest foreign exchange reserve buffers and the least policy space because domestic banks are mainly owned by West European banks. In Asia regional banks and non-bank financial intermediaries, eg state development banks and SWFs, are more able to substitute international bank lending. More generally the countries that are vulnerable to capital outflows from international bank retrenchment are those in current account deficits which depend on continuous capital inflows. They are vulnerable to funding gaps arising from spikes in foreign investor risk aversion, as was observed in the summer of 2013.

The segments of finance most subject to funding gaps are specialty finance lines where investment banking has a comparative advantage. These are project finance and longer-term structured credit where syndication and risk sharing must be organised. The problem is that those credit segments most at risk of being curtailed are the ones which finance innovative investments most important to potential growth. The borrowers that are substantially hurt are municipalities and SMEs. This is why new instruments of finance suitable to non-bank investors must be created.

Banks need to adapt to an environment where credit risk will entail higher Tier 1 capital and contingent provisions, and hence there is permanently higher demand for assets that can be pledged as collateral. New resolution frameworks aiming at protecting taxpayer money will lead to larger losses for bond holders in the event of resolutions. SWFs will be among those bond holders. Therefore funding costs will be permanently higher for banks, but less destructive financial crises might well lower the social cost of finance in reducing the probability of occurrence of systemic risk. This is not a contradiction, because situations where systemic risk is latent are the ones where the private cost of failure for credit suppliers is inferior to the social cost of financial crises adjusted for the probability of systemic risk. Any allocation of payment for losses with a predefined resolution framework makes private and social costs closer. In forcing banks and their creditors to be more responsible, the new comprehensive prudential policy, in making micro rules and macro instruments available to central banks and resolution authorities consistent, will improve intrinsically imperfect and unstable finance.

The probability of systemic risk will be lowered, not only by new resolution frameworks with bail-ins and living wills, but also by splitting universal banks to eliminate government guarantees on market finance regulation and by regulating shadow banking much more tightly than prior to the financial crisis. The idea is to induce stricter market discipline to force banks to improve their risk profiles. There will be permanent consequences for international banking. The flow of cross-border credit will be scaled back permanently, as balance sheets will generally be reoriented toward home markets to reduce risk. Let us call this structural change a move to viable and limited financial globalisation, as Dani Rodrik puts it. It will fit with national states as long as there is no move toward worldwide financial regulation.
based upon a universal regulator and a world central bank. This workable international financial system does not preclude regional arrangements such as the one that might be established in Europe if banking union is completed.

2. Lack of long-term finance: regime shift needed and opportunities for sovereign wealth funds

Long-term investments should rise substantially with long-deferred infrastructure needs due to the impact of the financial crisis, the ecological transition and the urbanisation drive and industrialisation in EMEs. The estimates of the international institutions reach US$18.8 trillion for nine major regional or national economies in 2020 against US$11.7 trillion in 2010 (Table 2); this is a conservative estimate since it is related to moderate growth.

Long-term investment demand will increase faster than GDP in every region. Bank-intermediated market finance will not be able to accommodate this within the existing structures in view of the necessary prudential restraints. Neither can pension funds and insurance companies, shackled as they are by the legacy of underfunding, by accounting requirements and by solvency ratios for insurance companies. Among SWFs, those mandated on fiscal stabilisation are not expected to provide long-term finance. However, the bulk of SWF activity is investing national wealth for future generations with truly long horizons. They can manage fairly diversified portfolios across instruments and territories if their ALM is well defined, meaning that their time-flexible strategies are based upon risk factors and not preconceived asset classes.

Since governments are unlikely to fill directly the gap between investment needs and supply of long-term finance, scarce public resources must be used to introduce a new regime of finance capable of attracting more non-bank investors into the realm of long-term finance. It will require designing new methods and instruments to share risk so that expected returns can reasonably be assumed to be higher than costs in risk factor analysis.

The Group of Thirty, elaborating on World Bank and OECD suggestions, has made substantial proposals that could lead to a regime shift in finance. The proposals are articulated according to four objectives.

### Table 2. Long-term investment needs by regions (in constant 2010 prices and exchange rates)

<table>
<thead>
<tr>
<th>Region</th>
<th>US $ trillion</th>
<th>2010</th>
<th>2020</th>
<th>Average growth rate (%)</th>
<th>Projected GDP growth rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>3.5</td>
<td>5.2</td>
<td>3.9</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>Western Europe</td>
<td>2.2</td>
<td>2.7</td>
<td>2.1</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>1.6</td>
<td>1.9</td>
<td>1.9</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>3.0</td>
<td>6.5</td>
<td>7.9</td>
<td>7.6</td>
<td></td>
</tr>
<tr>
<td>Other large emerging</td>
<td>1.4</td>
<td>2.6</td>
<td>6.3</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Nine countries or regions</td>
<td>11.7</td>
<td>18.8</td>
<td>4.9</td>
<td>–</td>
<td></td>
</tr>
</tbody>
</table>

Source: Group of Thirty, Long-term finance and economic growth, 2013, from exhibit 3, p 27.

First, ensure that financial investors are better able to consider long-term horizons in their investment strategies. To do so it is necessary to avoid widespread maturity mismatches in promoting guidelines for the governance of public pension funds and SWFs; discourage passive management based upon benchmarks; use measures of returns consistent with long-term horizons and incentive pays based on long-term returns; avoid maturity mismatches in replacing mark-to-market accounting by mark-to-funding that links the value of liabilities to the value of assets committed to be held onto the maturity of the liabilities. For insurance companies the new minimum capital requirement should be made countercyclical.

Second, create or reinforce public intermediaries and design instruments geared toward the provision of long-term finance for innovation. This is the realm of public–private co-operation in project finance, which embodies different types of risks in the different phases of the project. Private-sector expertise in providing advice and bringing seed money to start-ups (“business angels”) should be matched with bridge finance of venture capital funds in the development phase, the latter being set up as alternative assets by long-term investors with risk-guarantee schemes provided by public intermediaries. Other devices to share risk are: credit-risk guarantees, first-loss provisions, subsidies, etc. The public financial intermediaries participating in bridge finance and supplying guarantees are development banks and infrastructure banks. Long-term investors such as SWFs can concentrate on the commercial exploitation phase of infrastructure projects, while the income flows for the use of the infrastructure matches the payment flows they must make to the national budget. It is possible to enhance the pool of saving available to long-term investment with compulsory retirement saving programmes channelled to SWFs with long-term investment mandates, such as the Norwegian fund.

Third, develop a broad spectrum of debt and equity financing instruments over a lengthy timeline. The main field of improvement is strengthening the robustness of debt securitisation of SMEs: better disclosure and standardisation (plain vanilla ABS), margin calls, centralised clearing and settling houses with direct links to central banks. Enhance corporate bond markets along with the securitisation of long-term debt in establishing standards of rating and appropriate capital regimes for institutional investors. What financial investors, candidates for long-term investments, need are well-behaved domestic yield curves for private debts in as many countries as possible.

Fourth, structure capital controls so that cross-border capital flows support the allocation of international portfolios while discouraging “hot money”. China gives the right example. Capital accounts are gradually liberalised as much as domestic capital markets are developed and macroprudential tools are made operational.

E. Sovereign wealth funds in the transition to sustainable growth: the case of China

In future decades SWFs will accompany the new era of shifting wealth mentioned in the beginning of the previous section. They will progressively decouple from low-yield, low-growth mature economies into investing in the promis-
Sovereign wealth funds in the mutation of global finance

... equal parts. This fund is managed as a PE fund to inject capital into promising SMEs dedicated to frugal innovations.

Frugal technologies are innovations that are adapted to low- and middle-income countries and which will be adopted by developed countries under the constraints of sustainability. Therefore they are reverse innovations. They combine low costs and creativity. They save the use of non-renewable resources and they have a low ecological footprint. Firms in emerging market countries are best placed to undertake them, because they are in the vicinity of large pools of demand for simple low-cost goods that allow only very thin unit margins. In China it will be the realm of private businesses.

Technological breakthroughs embodied in radically new products, bought first by Western elites and eventually trickling down, are far from being the bread and butter of innovation. Far more important economically are incremental innovations improving products and processes for hundreds of millions of people that will enter the middle class in the next two decades. Frugal innovation can stem from reconfiguring existing technology to spare the use of raw materials and to reduce the impact on the environment. China and India will compete in this incremental cost-cutting and environment-friendly innovation. Their firms can compete successfully against Western multinationals.

Medium-size private companies can work in flexible networks of associated suppliers organised along mutual solidarity lines structured by their guanxi. It makes it easier to adjust to volatile demand with low spare capacities and short waiting lines. Consumer research centres in prominent cities can handle cultural complexities and fuzziness in taste to help transforming new products brought by companies to suit local tastes. The most successful innovations are the ones that can create markets for people who had never consumed industrial products before. They rely on specific marketing targeted at poor people’s day-to-day habits. To penetrate the countryside, local governments have also an important role to play in investing heavily in on-the-run education. For instance, teaching people basic hygiene is a prerequisite without which markets for soaps and detergents have no chance to take root.

Frugal production inclusive of masses of poor people as customers requires new concepts of management and an entrepreneurship that China is not lacking. What is now at stake is turning the poverty of consumers into strength. Because the private sector is so overwhelmingly important in China, frugal innovation will be a paramount driver of sustainable growth in the present decade. Indeed, in 2010 there were roughly 43 million companies in China, 93% of them were private and they employed 92% of the labour force. These companies need efficient services and capital to prosper.

2. Public financing of private equity funds: an original solution to promote entrepreneurship in China

An interesting event occurred in September 2012. An agreement was concluded between the French Caisse des Dépôts and China Development Bank (CDB), two public financial entities, to create a common fund (with €150 million in capital) to finance French and Chinese SMEs in equal parts. This fund is managed as a PE fund to inject capital into promising SMEs dedicated to frugal innovations.

1. Creating entrepreneurship and promoting indigenous frugal innovation

The usual view of development is of a catching-up process through technology transfers. The existence of a technology frontier is determined by the state of knowledge produced by investment in new technologies undertaken in the most developed countries. The technology is diffused through a number of channels: buying property rights, welcoming technology-linked FDI, stealing and imitating. The farther a developing country is away from the frontier, the wider are the opportunities to assimilate the imported technology and the faster is its total factor productivity growth (TFP). Therefore Western multinationals and their vast network of subcontractors are supposed to be the only vectors of the dissemination of knowledge.

However, there is a small problem. The trend for technological progress drives the mode of consumption. At some point, imitating the “American way of life” is no longer a viable future. Long before Chinese households have reached the same rate of possession of cars, air conditioners, etc., as their fellow Americans, the ecosystems of the world would have been destroyed. The whole world is under the threat of unsustainability from the credit-induced, natural-resource-wasting and runaway pollution-emitting model. Catching-up countries must leapfrog the historical era of unlimited suburban housing cum universal car ownership and accelerated obsolescence of consumer goods. Indigenous technologies must be frugal.

Frugal technologies are not second-hand technologies. They are drawn from the most advanced pool of knowledge to create new lines of products. They give access to modernity to low-income populations and they are friendly to the environment. Therefore they transform the technology frontier.

The usual view of development is of a catching-up process through technology transfers. The existence of a technology frontier is determined by the state of knowledge produced by investment in new technologies undertaken in the most developed countries. The technology is diffused through a number of channels: buying property rights, welcoming technology-linked FDI, stealing and imitating. The farther a developing country is away from the frontier, the wider are the opportunities to assimilate the imported technology and the faster is its total factor productivity growth (TFP). Therefore Western multinationals and their vast network of subcontractors are supposed to be the only vectors of the dissemination of knowledge.

However, there is a small problem. The trend for technological progress drives the mode of consumption. At some point, imitating the “American way of life” is no longer a viable future. Long before Chinese households have reached the same rate of possession of cars, air conditioners, etc., as their fellow Americans, the ecosystems of the world would have been destroyed. The whole world is under the threat of unsustainability from the credit-induced, natural-resource-wasting and runaway pollution-emitting model. Catching-up countries must leapfrog the historical era of unlimited suburban housing cum universal car ownership and accelerated obsolescence of consumer goods. Indigenous technologies must be frugal.

Frugal technologies are not second-hand technologies. They are drawn from the most advanced pool of knowledge to create new lines of products. They give access to modernity to low-income populations and they are friendly to the environment. Therefore they transform the technology frontier.
The reason of this initiative is that French and Chinese SMEs suffer from the same hardship. They are deprived of bank credit for many reasons: their historical record is limited, the cost of monitoring their debt is high and the unit amounts of borrowing are too low, and they have few if any assets to pledge as collateral. Those perennial problems have been magnified by the deleveraging constraints that plague the banks.

The problem is acute in China because the pressure to grow creates high financing needs. Financial deficits have worsened in China since 2009 with the increase in input costs due to the rise in unit labour costs and the appreciation of the renminbi. To compete, Chinese firms must innovate and to innovate they need money. In addition, their traditional access to money is self-finance and largely informal means of external finance (tontines and family finance). These informal credits are not able to fulfil the needs of more than 10 million firms. The problem took a contentious course in 2011 after monetary policy was tightened to tame the inflationary pressures that built with the 2009 stimulating plan. Bank credit contracted and unprecedented failures of SMEs spread in the south-east, notably in Wenzhou where tens of SMEs went bankrupt. This is a big challenge for the government because SMEs are responsible for 80% of employment in China.

Incentives given to ease access of SMEs to bank credit had only limited success. This is why the Chinese government took interest in PE. The role of Chinese PE is to channel finance into innovative activities at the local level. Furthermore Chinese SMEs are very active in exports. They make up 70% of manufacturing exports of the country. Because the government wants to help the internationalisation of SMEs, joint ventures between Chinese and foreign public financial institutions in promoting transnational PE are an effective financial means to this end. Moreover it has the advantage of setting up a financial concept alien to Wall Street-dominated venture capital.

The political stakes are high. Who is going to control PE in China? Which public financial institutions are going to participate? The national Social Security Fund has entered the sector since 2008, insurance companies since 2010, the CDB in 2012. The government wants to regulate the whole process in order to prioritise the channelling of the funds into the strategic sectors selected by the strategic planning of the National Development and Reform Commission (NDRC). The intricacies between industrial policy, national planning and public vehicles of finance to enhance private involvement shows amply that China is developing a financial model at odds with Western market finance principles. The differences are also notorious in the methods of PE management.

3. The model of PE management in Chinese finance

Chinese public investors participate in the development policy of the country. In practice they control tightly their investments in PE funds. They sit on the investment committees of PE funds, have veto rights and exert effective control. This is a very different business model from Western PE. Chinese PE funds are much larger, with management staff of usually over 100 people. Their fields of action are broad geographically and sectorally. The relationships with target companies are based on personal mutual trust in conformity with the guanxi cultural model. The large staff allows for a continuous presence that is useful for collecting inside information. These funds operate in complex structures along with diffuse decision-making processes opposite to Western management criteria.

The reasons for the abundance and diversity of the staff in PE funds stem from the business environment in China. SME owners are skilled in the art of manipulating accounts and drawing up multiple accounts. This is why PE managers recruit a substantial number of former accountants. Bonuses are not delivered in the same way as in the West. They are not tied to the obsession of the exit. They are more deal-driven than performance-driven in the Wall Street meaning of the word “performance”. Chinese PE funds might be of lower performance; however, this avoids the insane race of levered PE funds that buy out any firm they can strip of assets to get a minimum 20% financial return in destroying the firm. Then they exit and start again.

As far as governance structures are concerned, Chinese public investors indulging in the PE business favour horizontal governance structures. They prefer multiple independent local teams to hierarchical centralised governance structure. The PE department of the CDB has many independent local teams, each with light structures. The continuous presence of local staff on the field is more effective for discovering potential firms and for ongoing monitoring of the investment. This is all the more important in China because the decision-making power over policies that impinge upon the activities of SMEs are in the hands of local government.

The teaching of the analysis of the role of PE in China for the management of SWFs is very important to governance. Investment in alternative assets is the way of the future because it is the type of finance that will encourage the incipient sustainable growth regime. However, this type of investment cannot be properly managed by standard portfolio allocation models. Deep involvement in the structural policies of the countries and an organisation that facilitates the relationships with local SMEs are all important.

F. Conclusion: the future of sovereign wealth funds

SWFs are going to be important financial vehicles in the future of financial globalisation. Their future potency will stem from powerful forces, active in the world economy in the twenty-first century. The deepest and strongest such force is the shifting of wealth. The two-century-long economic hegemony of the West is coming to an end. In less than a decade China will be the largest economy of the world. In 2050 Europe will have shrunk in economic and demographic weight to a secondary region. The US will still be a big and influential power, but a primum inter pares.

As explained in Section D.1, financial globalisation is retreating to nationally manageable cross-border capital flows, because world politics is not yet able to set up the international governance to regulate full capital mobility. Indeed, the main lesson of the global financial crisis is that finance is not self-regulating. It is not only a question of political
Sovereign wealth funds in the mutation of global finance

Finance will adapt to those structural changes and to the aftermath of the financial crisis. Public financial institutions, encompassing SWFs, development banks and other types of public financial entities, will enter the picture. They will rise to prominence because banks will retreat from the excessive hegemony on financial markets that spurred disaster. Meanwhile, both the huge investments to produce public goods and the financing of innovations need long-term finance. This type of finance was scarce under the Wall Street casino model of market finance led by international investment banks and universal banks. SWFs and other public financial institutions, which collect large pools of private savings and make transfers of public saving for the welfare of future generations, are the proper institutions to finance real investments that enhance potential growth.

To close the gap between the need for huge investment and the dearth of long-term finance, the model of finance that has failed must be overhauled: less debt and more equity, public–private partnerships in setting up PE funds to finance innovative SMEs, new methods for safe securitisation, and public guarantees for project finance. These are elements in a new financial landscape where SWFs can thrive and best serve the public good.

1 Preqin Sovereign Wealth Fund Review, Executive Summary, 2013.
2 Some papers were more objective. A detailed one was J Aizenman and R. Glick, “Sovereign Wealth Funds: Stylized Facts about their Determinants and Governance”, NBER Working Paper no 14562 (December 2008).
5 For a description of the ambiguities in discussing this code of conduct, see BJ Cohen, “Sovereign Wealth Funds and National Security: The Great Tradeoff” (2009) 85(4) International Affairs 713.
8 Xu Yi-chong and Gawdat Bahgat (eds), The Political Economy of Sovereign Wealth Funds (Palgrave Macmillan, 2010).
16 Mitchell, Piggott and Kumru, supra n 11.
19 David Swensen had experimented and theorised alternative asset management for a long time in this capacity based on the endowment fund at Harvard University. See DF Swensen, Pioneering Portfolio Management: An Unconventional Approach to Institutional Investment (The Free Press, 2000).
20 The theory of intertemporal asset allocation when stochastic returns are not iid (independent and identically distributed) over time is exposed in C Campbell and LM Viceira, Strategic Asset Allocation (Oxford University Press, 2003).
21 The lessons from the Norwegian fund are drawn from Ang, supra n 17.
22 Of course it is not what standard financial theory is preaching. For a hostile view of the opacity of SWFs, see J Kotter and U Lele, “Friends or Foes? The Stock Price Impact of Sovereign Wealth Fund Investments and the Price of Keeping Secrets”, International Finance Discussion Papers no 940, Board of Governors of the Federal Reserve System (August 2008).
23 Campbell and Viceira, supra n 20.
Sovereign wealth funds in the mutation of global finance

27 HP Minsky, Stabilizing an Unstable Economy (Yale University Press, 1986).
31 They have been so all over the history of financial capitalism. See CP Kindleberger, Manias, Panics, and Crashes: A History of Financial Crises (John Wiley, 4th edn, 2001).
33 Schularick and Taylor, supra n 29.
41 Jl Boillot and L Dembinski, Chindiafrique (Odile Jacob, 2013).
42 Guanxi is a principle of social networking in Chinese civil society stemming from long-standing Confucian moral tradition. It is based upon sustained trust akin to enlarged family ties.
43 M Aglietta and G Bai, China’s Development: Capitalism and Empire (Routledge, 2012), ch 6.