Managing a natural resource boom in a transition economy context

UN sabbatical study by Tserenpuntsag Batbold
conducted in August-December 2015[1]

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Introduction

The mining sector accounting for around 20 percent of GDP had been a key driver of the Mongolian economy since the country adopted a liberal mining law in 1997. Between 2000 and 2010, mineral exports increased from $267 million to $2.3 trillion and its share in export rose from 55 percent to 90 percent. As a result, economic growth averaged 8 percent per year, quadrupling per capita income to over $4000, catapulting it to middle-income country status within a few years.

Indeed, just three years ago, Mongolia was poised to embark on a sustained high growth path thanks to the large-scale exploitation of its enormous mineral wealth. In particular, the discovery of the Oyu Tolgoi (OT) and Tavan Tolgoi (TT) deposits, two of the largest undeveloped copper and coal reserves in the world, promised to drastically change the country's fortune. The establishment in 2009 of a joint venture to develop OT attracted over $6 billion investment - equal to 50 percent of GDP. The first, open mine phase of development, which began in 2010 started production in 2013 and, if had continued uninterrupted, would have raised copper exports to $7 billion by 2020, further tripling per capita GDP.

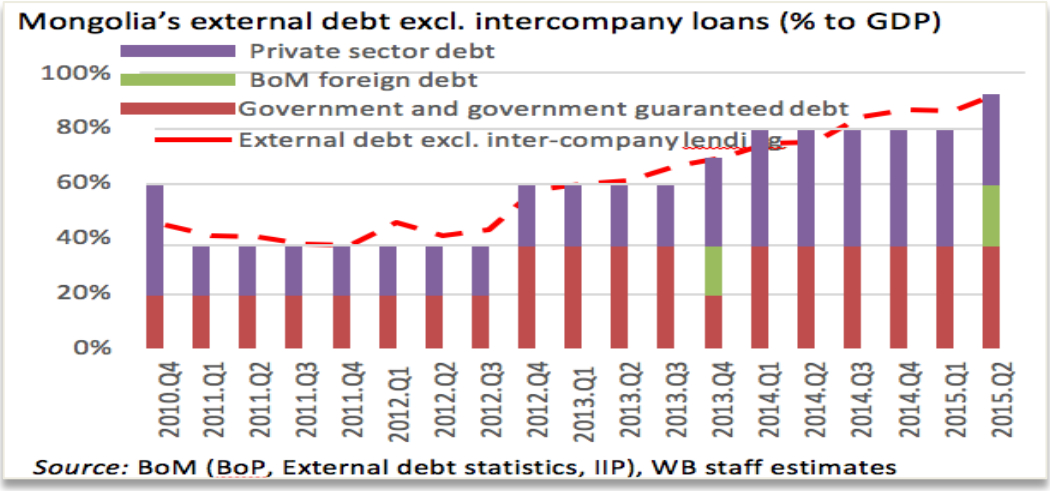
As was expected, the growth rate of the economy shot up to double-digits, reaching 17.3 percent in 2011, 12.3 percent in 2012 and 11.6 percent in 2013. Expectations about Mongolia's medium-term performance were rosy, as it had been prepped for quite some time by international financial institutions (IFI) on how to avoid the well-known "resources curse". It is worth noting that the spillover effect of the mining investment boom into the wider economy was remarkable, with the non-mineral sectors growing by 20 percent in 2011, 13.3 percent in 2012 and 9.8 percent in 2013.

However, the expected continuation with the second, underground phase of OT, which was to bring 80 percent of the revenues, stalled because of domestic politics. The key factors were the demand by the new government, installed after the 2012 election, to renegotiate the agreement with Rio Tinto, the mine operator, and the attendant delays in resolving the disagreements. This had a major negative impact on foreign direct investment (FDI) inflows. FDI that reached more than $4 billion per year in 2011-12 plummeted to just $382 million by 2014, and a meagre $165 million in the first 9 months of 2015, with a disastrous impact on investment and growth. If FDI financed 65 percent of gross investment in 2011-12, accounting for about 40 percent of GDP, its share

dropped to 17 percent in 2013 and 4 percent in 2014. According to the latest WB country economic update issued in November 2015 (WB, 2015), growth decelerated to 7.8 percent in 2014 and is expected to further decline to 2.3 percent in 2015 and possibly below one percent in 2016. Again, it is the non-mineral GDP that slowed the most, growing just 3.6 percent in 2014, despite the 24 percent growth of the mineral GDP and is outright contracting in 2015. Wholesale and retail trade, transportation, construction, energy and manufacturing are being hit hardest.

Exports, which rose by 35 percent in 2014 on the back of the first phase of OT, have plunged by 35 percent in the first 8 months of 2015, compared with the same period a year ago. The expected balance of payments impact has been somewhat softened by the even worse collapse in imports due to the economy's deceleration. Imports contracted by 17.4 percent in 2014, and by almost 30 percent in 2015, mostly of capital goods, reflecting the poor perception of the near-term prospects of the economy. With further weakening of demand from China, which purchases 99 percent of copper exports (and 96 percent of coal, the other main exports), the near term outlook is bleak.

Despite the sharp contraction in imports, the country is experiencing a heavy balance of payments pressure, with the exchange rate depreciating by 40 percent in nominal terms since mid-2013. In the meantime, public external debt has increased dramatically as the authorities tried to maintain growth through fiscal expansion and public investment, with government-funded investment growing from 10 percent in 2010 to 15 percent of GDP in 2014, with a sharp rise in foreign borrowing on commercial terms. Therefore, the government's external debt more than doubled in 4 years to 55 percent of GDP in 2014 and is projected to increase to 69 and 75 percent in 2015 and 2016, respectively. Notwithstanding all this public external financing, the overall balance of payments stands at a $298 million deficit as of September 2015, leaving international reserves below the desirable level of 3 months of imports. According to the IMF, the balance of payment financing gap is estimated to be sizable over the next 3 years (IMF 2015 Annex of Debt Sustainability p.4).



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Source: Figure 54, WB (2015), p. 31

Thus, even before the downturn in international commodity markets, Mongolia's historic chance to accelerate its economic development had been thwarted by domestic politics, despite efforts by the IFI's to prepare the country for the anticipated boom. Despite its enormous undeveloped mineral wealth, today Mongolia may be solvent unless OT 2 and/or TT are successfully developed. If one includes the private sector borrowing, mostly inter-company lending in the mining industry, Mongolia's total external debt has already reached 180 percent of GDP and it is facing serious short-term liquidity/rollover issues in the near future. In particular, the maturing debt of over $1.5 billion in 2017 would exert a heavy pressure, most likely necessitating additional and more expensive external borrowing to avoid outright default. Indeed, credit rating agencies have downgraded the Mongolian government's rating several times since 2013 and now Mongolia's sovereign spreads are among the highest of all frontier markets.

This spectacular reversal of fortune was largely due to wholesale failings in key policy areas by Mongolian politicians, despite substantial efforts by IFIs to equip them with the international best practice tools to avoid such an eventuality. Instead of smoothing the large capital inflows, as advised by IFIs, both fiscal and monetary policies rushed into overdrive, relying on advance payments exacted from investors and commercial external borrowing, implicitly collateralized by the expected resource revenues. Understanding how it happened and how it could have been prevented and offering recommendations to prevent its repetition and break the current vicious circle is the purpose of this study.

I. What Happened ?

Fiscal management failure

Mongolia adopted in 2010 the Fiscal Stability Law (FSL), grounded in the best practice experiences of other resource-rich countries and meticulously tailored to Mongolia's circumstances with technical assistance from the IMF and described as the "state of the art fiscal framework for managing the resource revenues, which is designed to help avoid the boom-bust cycles that so many other resource-rich economies have fallen into" (by the Deputy Managing Director as late as June 25, 2014 at a High-Level conference on the Macroeconomic Outlook for Mongolia). It was a rule for expenditure smoothing to match the country's slowly evolving absorptive capacity, macroeconomic stability constraints and the limited scope for efficient scaling-up of public investments, in the face of fast expanding and potentially volatile resources revenues. It was supposed to achieve this purpose by restricting spending to the 16-year moving average of the past, current and expected resources revenues.

The FSL stipulated that the structural fiscal deficit of 2 percent of GDP (initially recommended at zero but increased at the insistence of Mongolian politicians) and public external debt of 40 percent of GDP be achieved no later than 2013. Unfortunately, the government felt free to expand spending, abusing the relaxation of its borrowing constraints due to the resources windfall. Thus, total government spending, including the DBM's non-commercial lending, rose by 73 percent in real terms between 2010 and 2012 causing the overall deficit to reach 11 percent of GDP, making the FSL breach inevitable.

The establishment of the Development Bank of Mongolia (DBM) in 2011 facilitated the process, serving as a vehicle of off-budget capital spending. The new government's creation of the Ministry of Economic Development in September 2012 and launch of a sovereign bond issuance in December 2012, with the proceeds channeled through the DBM for public investment projects, accelerated the process, raising the fiscal deficit to around 10 percent of GDP in 2013.

Meanwhile, the parliament revoked the two-third majority requirement for changing the FSL by the initiative of the deputy speaker, a leading parliamentarian of the ruling Democratic Party, and raised the debt ceiling. In the meantime, the quality of investments was made worse by excessive tendency of the parliament to insert poorly-designed inefficient projects, now a cause for demands for investigations into and politically motivated contract awarding.

Only in 2015 when revenue shortfalls reached 15 percent of the budget plan, authorities were forced to introduce tighter expenditure controls. Still, the fiscal deficit is projected to be high, given the weak prospects for mining-related tax revenues, normally accounting for over 20 percent of government revenues. The spending plans of the government for 2016, suggests the deficit is likely to remain in excess of 5 percent of GDP in the near future. Moreover, if the so-called commercial lending by the DBM, financed by debt issued on government guarantee but granted to SOEs and "priority" corporate projects and banks for subsidized loans, is added, the consolidated budget deficit is expected to reach 8-9 percent of GDP in 2015 and 6-7 percent in 2016.

Consequently, the government debt level doubled and its structure has become increasingly dominated by commercial debt, sharply worsening the debt dynamics. Indeed most of it was contracted in the last quarter of 2012 and reached 24 percent of the government debt in 2014 from roughly none 3 years earlier. It includes $1.5 billion Chinghis Bonds, $580 million Euro bonds and 30 billion yen samurai bonds by the DBM, in addition to its government guaranteed loans of over $460 million and a $122 million guarantee to MIAT. Adding the central bank's growing foreign liabilities through its drawing on the People's Bank of China swap line (excluded from public debt in Mongolian Statistics) brought the external public debt to 55 percent of GDP in 2014, compared to just 23 percent in 2011.

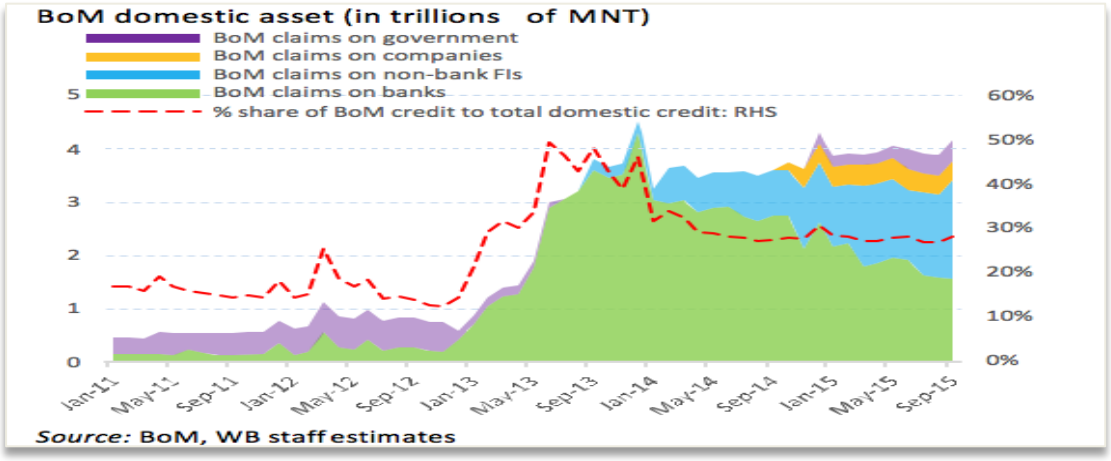
The external public debt is to reach almost 70 percent of GDP by the end of the year and to further climb to 74.6% of GDP in 2016, far beyond the safe limit of 40 percent set by the FSL, making even the revised medium-term deficit ceiling and the external public debt targets unattainable over the coming years.

Monetary policy mistakes

The conduct of monetary policy by the Bank of Mongolia (BoM), as the central bank is known, is supposed to be quite independent of politics. But it has become a quasi-fiscal operation, even less consistent with macro stability or the very principles of central banking in a market economy, following the 2012 election.

While fiscal policy was fast expanding, the Central Bank's domestic assets sharply increased from MNT 566 billion at the end of 2012 to MNT 4.5 trillion in 2013 under its aggressive administrative lending programs, known as "quantitative easing" (QE). This QE consisted of the so-called Price Stabilization Program (PSP) of lending to suppliers of some consumption goods and the construction industry, as well as a subsidized housing mortgage program to support housing ownership and construction. It injected MNT 3.5 trillion, equal

to 18 percent of GDP, at its peak in December 2013., including a MNT 900 billion reserve injection into commercial banks as one-year term deposits for targeted on-lending.



Source: Figure 22, WB (2015), p. 19

As a result, Central Bank domestic assets grew from 14 percent in 2012 to 46 percent of total domestic credit by end-2013, resulting in reserve money increase of 54 percent, while its claims on non-banks reached 57 percent of GDP. That led to broad money growth of 24 percent in 2013, despite the sharp drop in net foreign assets. Monetary expansion accelerated to over 40 percent year-on-year in early 2014 as domestic credit shot up by over 150 percent and decelerated only after mid-2014 with the gradual withdrawal of some of the QE programs under the IMF pressure.

Although the PSP loans withdrawal was agreed to be completed by end-2016, the mortgage subsidization program continues, its size growing to MNT 2.4 trillion as of September 2015, including MNT 1.6 trillion of securitized mortgage loans transferred from commercial banks. So the outstanding policy loans issued by the central bank are still large at over MNT 3 trillion as of September 2015, amounting to 22 percent of total domestic credit.

Consequences of the loose monetary policy

The direct effect of the inappropriately loose monetary policy was persistent inflation, Tugrik depreciation and worsening of balance of payments and banking sector asset quality.

With the Central Bank credit to commercial banks having hit 21 percent at the end of 2013 compared with 2 percent in 2012, inflation jumped up to 14 percent in 2012 and stayed in double-digit until the mid-2015 tightening of the monetary policy as mentioned above, helped by reduction in inflationary pressure by

weakening domestic demand and the sharp increase in meat supply on record growth in livestock.

However, inflationary expectations remain high and are being translated into ongoing demands for double-digit wage increases. The World Bank reported that the recently started monthly industrial produce price index rose to 13 percent in the first quarter of 2015, despite the sharp fall in mining producer price index. Although tempered in the near future by weak import prices and slower exchange depreciation expected, bringing inflation under lasting control requires deeper fiscal and financial reforms.

Also, the tugrik began to depreciate sharply from mid-2013 through early 2015, falling from MNT 1410 to MNT 1984 per US dollar, despite frequent BoM interventions resulting in net sales of over $3 billion in 2013-2014. The rate of depreciation slowed in 2015 and even reversed temporarily by some 7 percent in April on the positive news about the agreement on the second phase of OT and the launch of a $500 million international bond issuance by a bank. However, as the tugrik rate approached MNT 2000 per US dollar, the BoM resumed its heavy interventions since July 2015 without much success in arresting the inertia of fall. The downward pressure is likely to persist given the constellation of the still loose fiscal and monetary stance and the week external sector outlook.

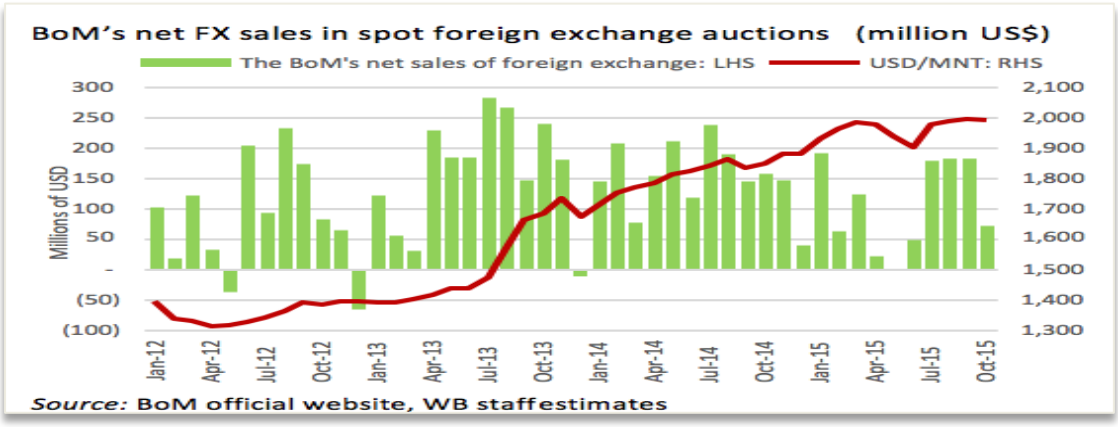


Figure 60, WB (2015), p33

Although the expansionary monetary policy stance was partially offset by BoM interventions in foreign exchange market, its net foreign assets have been steadily declining and even turned negative in 2015. The unsustainable balance of payments and wasteful interventions have been sustained by additional external borrowing. International reserves increased temporarily by the $1.5 billion Chingis bond issue in 2012, which brought official reserves to over $4

billion at the end of the year. Its receipts were placed initially as tugrik deposits of the government, but were injected in 2013 through DBM's expenditures. In addition, BoM drew down the equivalent of $482 million from a bilateral currency swap facility with the People's Bank of China in 2014 and another $630 million in 2015, doubling the Central Bank's foreign liabilities from 8.5 to 15 percent of GDP. The May 2015 $500 million international bonds issued by a commercial bank at 9.375 percent rate under a sovereign guarantee was also intended to replenish BoM's international reserves via a 5-year currency swap arrangement.

Banking sector impact

The monetary base expansion by more than MNT 4 trillion in 2013 and 2014 due to the QE was reflected in a large increase in BoM claims on the corporate and financial sectors, accounting for 40 percent of the increase in domestic credit, reminiscent of the practice of old central planning days. In the environment of persistent inflation and depreciation, bank deposit rate gradually rose to 13 percent by August 2015 and lending rates, as a weighted average of new domestic currency loans, rose to 20-21 percent from 18-19 percent in late 2014. These rates were mostly driven by deposit rates and not much sensitive to the changes in central bank policy rate, due to the substantial scale of the subsidized loans mentioned earlier. Thus the recent big administrative reduction in interest rates on mortgages and agricultural lending, represents outright “financial repression” of by Shaw and McKinnon of 50 years ago, throwing back by decades whatever has been achieved in financial liberalization.

Despite the gradual winding down of PSP, funding to the subsidized mortgage lending continues, now accounting for over 3/4 of total mortgage loans. Moreover, the government announced in August 2015 its decision to reduce the down-payment requirement from 30 to 10 percent by issuing DBM guarantees on the reduced 20 percent and the BoM purchased 90 percent of the Residential Mortgage Backed Securities issued via Mongolia Ipotek Corporation, adding to the opacity and risk of new mortgage loans. There is now a talk of shifting the mortgages to the social security fund, effectively passing on the toxic assets to the least able to bear the risk. All this is fueling a boom in mortgage credit, and possibly a brewing Mongolian "sub prime" crisis down the road.

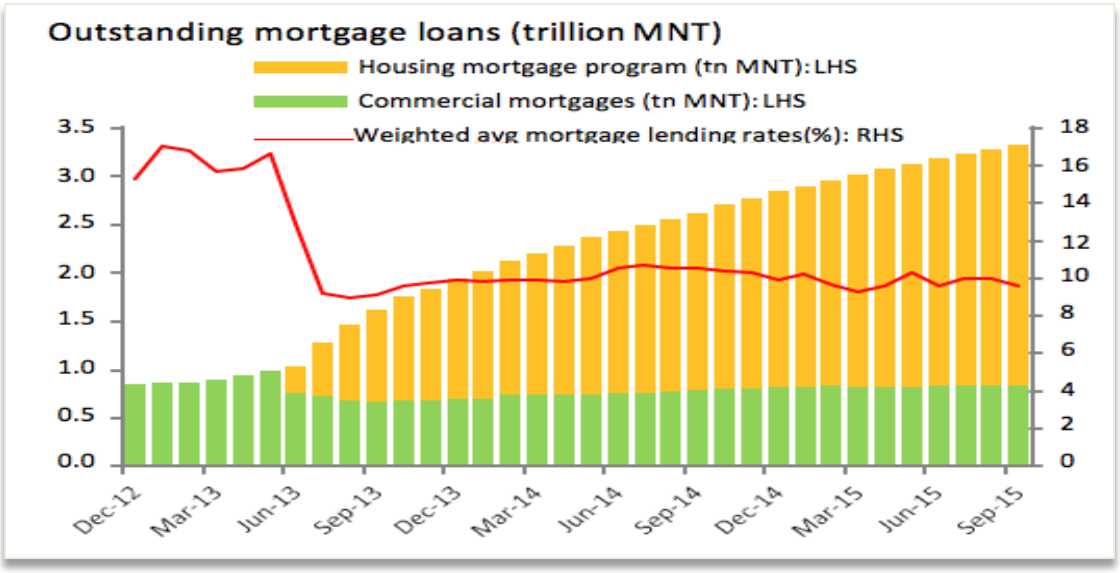


Figure 35, WB (2015), p24

The quality of assets of the banking sector has already drastically deteriorated on the back of the surge in bank lending that reached 60 percent year on year in early 2014, almost doubling in one and a half year. The non-performing loans shot up by 34 percent in just the first 9 months of 2015, its ratio in total bank loans rising to 7 percent from 5 percent in 2014. Past-due loans, meaning over-due for less than 90 days, more than doubled since the end of 2014, its ratio rising from 2.2 percent to 7.1 percent.

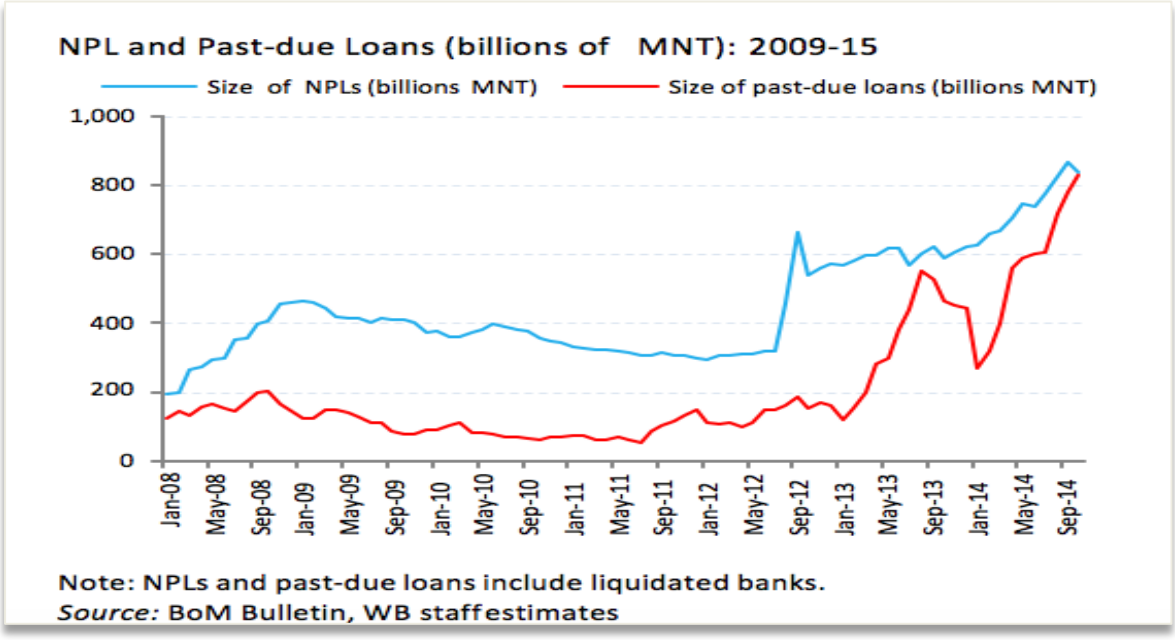


Figure 36, WB (2015), p24

This is against the background of ingrained regulatory forbearance, that already led to the fifth largest bank processing over half of government financial services, being taken into receivership in 2013 with recapitalization from the Deposit Insurance Corporation. It turned out that the related-party loans of that bank exceeded its capital by more than 2 times despite the regulatory restriction of 20 percent maximum and most of its assets and liabilities had to be transferred to a State bank, established by the government in 2009.

With the tightening of the QE, bank loan growth sharply slowed and local currency deposit growth, weakened by the slowing economy, even dropped into the negative in March 2015. The mining and construction industries, the main beneficiaries of the administrative lending policy are now most severely hit.

Despite the recent tightening of policy, loan growth so far still exceeds deposit growth, while the loan-to-deposit ratio remains high at 125 percent, albeit pulling back from its peak of 135 percent in late 2014. Foreign currency deposits, now accounting for 33 percent of total deposits, continue to grow slowly, bolstered by a sovereign bond issuance of a commercial bank, but the increased liquidity is absorbed mostly by excess bank reserves.

More importantly, the Central Bank's policy rate of about 12 per cent and the deposit and external borrowing rate with an elevated country risk premium at a comparable level suggest big distortion in financial resource allocation, threatening the stability of the banking sector. In addition, the proposed transfer of the government sponsored mortgage loans to the social security fund looks like passing off the unrecognized loss on pensioners without active political voice.

II. Why and What to Do?

So, instead of the expected miracle transformation, Mongolia is now facing unrelenting balance of payments pressure, inordinate external debt burden with a potential sovereign default and a brewing banking crisis. How Mongolia failed so badly, despite substantial efforts to equip it with the best practice tools to prevent it from falling prey to exactly such an eventuality?

The reasons are mostly of political economy nature. **Firstly**, natural resources revenues are rent, not the wages of one's labour. Such an inherently windfall gain, especially without clear property rights as in Mongolia, had triggered a frenzy of unproductive rent-seeking at all levels. It is the driving force behind the resources nationalism, free for all political rivalry. The unprecedented surge in populist politicians and wannabe patriots was ultimately fed by the constitutional clause declaring subsoil mineral wealth as the property of the people, on which all kinds of private and business interests preyed in a young democracy, highly vulnerable to demagoguery.

In particular, the competition for grabbing their share in the pie led to deepening oligarchization of the political parties, further eroding the capacity of the political system to advocate sound economic policies. Its worst consequence has been that the oligarchic groups with no capacity to make good use of the opportunities had succeeded in blocking the potentially efficient solutions by the economically more capable groups, by appealing to raw nationalism and mass ignorance, playing the card of protecting national interests and people's constitutionally guaranteed inheritance from foreign exploitation.

This wide-spread sense of vague entitlement and the ensuing ubiquitous rent-seeking behavior are poisoning not only the political life, but is threatening to reverse Mongolia's democratic economic transition achievements. Let alone politics and business, even the judiciary has increasingly been drawn into the self-destructive process. A good many politicians and businessmen, including foreign investors, have been arrested, starting with the Mining Agency Director (still in jail) and the Oil Agency director (died under arrest). There is a fear that the upcoming elections in 2017 and 2018 will degenerate into a struggle for protection against revenge prosecutions because it was the opposition-affiliated individuals who have mostly suffered until now. National unity and the very social fabric of Mongolia are under severe stress.

Secondly, Mongolia's incomplete transitional stage, marked by weakly-defined property rights, embryonic and often dysfunctional or malfunctioning market institutions and a judiciary lacking the deep reservoir of business law doctrine exacerbate the emerging collisions and add to the politicization of economic and business decision-making. After all, Mongolia had the longest, after Russia, heritage of planned economy and was probably the least prepared in terms of market economics education or practical know-how of managing a market economy. Its historical lack of prior experience of a market economy in contrast to European transition countries or even former colony economies, its geographical and geo-political isolation from international markets and their best practices are showing at every step of the way.

Instead of triggering a private sector-led economic boom and fast financial deepening on the back of the rare FDI surge, the strong traditions of state dirigisme and the socialistic egalitarian welfare state have been re-kindled by the prevailing sense of plenty. The relaxation of the macro borrowing constraint resulted in further loosening of micro-level soft budget constraint, the hallmark of centrally planned economy, reversing some of the key transition achievements. Indeed the last three years have seen a big qualitative backpedaling on market reforms and outright backsliding, especially, in the areas of central banking, banking sector supervision and public investment management, which is qualitatively now even worse than under central planning.

The **third** key factor that allowed all this was that the resources boom allowed Mongolia to graduate from the loans of the IFI's and their policy associated policy conditionality. The sudden access to international capital markets on easy terms without policy "covenants" had disastrous effects on macroeconomic policy discipline, given the weak indigenous technical and institutional capacity for planning and executing sound macroeconomic policies. Instead of steering the natural market-driven private sector-led growth, the state had re-asserted itself as the driver of the economy. The state serves today as the main propagator of the persistent soft budget constraint by encouraging populistic and wasteful policies, while socializing all kinds of losses from inefficient uncompetitive practices.

State is the key factor behind ubiquitous small and large hidden subsidies, amnesties and growing contingent liabilities, ultimately to be paid from the budget, despite the drastic fiscal adjustment required. Through its active distorting of the price mechanism and market forces, it is delaying the needed structural changes, thus killing the economy's future. At the same time it unnecessarily intervenes in competitive industries by over-regulation and administrative restrictions, ultimately providing rich breeding ground for petty corruption and unproductive influence peddling.

More importantly, excessive government investment spending into hastily-assembled projects, often driven by politically-connected business interests without proper screening for efficiency, is generating large potential losses and corruption. Furthermore, the new Industrialization Ministry has adopted and started financing an industrial policy plan for the next 15 years, based on an import substitution strategy under staggered tariff protection, which is a recipe for squandering the future natural resources revenues in wasteful white elephant projects. The Central Bank's reversion to Central Planning methods of financial allocation under the guise of QE and its increasing regulatory forbearance are particularly worrisome. Indeed, the mining, housing and construction industries, the main beneficiaries of its administrative lending policy, are the most suited sectors for market allocation with strongest demand and supply.

All in all, Mongolia's problem is mostly one of political economy, requiring a more comprehensive institutional solution, well beyond the fiscal framework, to depoliticize economic decision making. Otherwise, there is no assurance that the political process in Mongolia would not derail again the process of economic development, or even more likely to do so again, judging by the currently announced electoral platforms and some key recent developments in the country. The thrust of the reforms should focus on curbing the wrong but politically popular instincts of policymakers in the face of enormous capital inflows in an oligarchic democracy with little in terms of expertise or institutional constraints. Especially, the period from now until 2019-20 when the OT2 comes on line will be a critical period, given the Parliamentary and Presidential elections in 2016 and 2017. Indeed, without a qualitative 'regime change', the natural resource curse can come back with a vengeance with the recovery in commodity prices.

Designing and enforcing a macroeconomic framework, which can coordinate the fiscal, monetary, exchange rate policies, as well as an optimal level of external borrowing at an appropriate level of public investment, commensurate with the absorptive capacity of the economy and insulated from populist politics is the challenge. The purpose is changing the enormous windfall revenues from feeders of bad policies and waste into vehicles for disciplined, sound policies and high quality investment.

A Sovereign Wealth Fund?

On the upside, Mongolia is unusually rich in mineral resources with an estimated $1 to $3 trillion worth of reserves of copper, gold, coal, and oil, lying close to the huge expanding markets in China and Asia. Moreover, Mongolia's extraction costs are among the lowest in the world, making their future potentially less vulnerable to the current commodity price fall. Improvements in transport over time, aided by the recent agreement with China on duty-free transit to Chinese ports for exporting to third countries, should improve competitiveness.

The $6 billion investments and launch of the first open mine stage of OT alone resulted in a 30 percent increase in mining exports within a year, making Mongolia the fastest growing economy in the world. The TT, with coal reserves estimated at over 6 billion tons, could have boosted the economy equally sharply, if the government's proposed deal with foreign investors on another $4 billion investment, was not recklessly cancelled on the eve of its signing in July 2015. The second phase of OT, hopefully on track to come on stream towards the end of the decade, will bring further FDI inflows of over $5 billion. So, the success of just one or both of these projects can fundamentally change the economic fortune of the country, if only sound and competent policies can be assured.

However, the OT and TT related windfalls are enormous compared to the size of the Mongolian economy and the macroeconomic pressures they generate prove to be too great to manage through the existing fiscal and monetary policy arrangements, judging by the dismal recent track record described above. Politicians and the public never understood the rational and mechanics of the the Fiscal Stability Law (FSL) and the parliament and the government felt no binding constraint on its actions, despite the link to the highly visible copper price and clear legal limits on deficit and debt levels.

Indeed, the Integrated Budget Law passed in December 2011 on the compliance with FSL even spelled out sanctions in case they are violated. However, the parliament simply revoked first the two-thirds majority requirement for changing the law, and then raised the debt limit. Even now, many influential politicians, including the ruling party leadership, are calling for more borrowing and there are a lot of bilateral offers of further external financing, despite tightening access to international capital markets, making it harder for politicians to discipline themselves. Paradoxically, those who are most responsible for Mongolia's excessive indebtedness or disrupting OT or TT projects are some of the most ardent proponents of additional external borrowing- reflection of sheer ignorance at the strategic decision-making level.

More importantly, Mongolia is already on the path of wasting away the resources revenues and the external loans raised on their implicit collateralization in dubious import substitution and industrialization projects that are politically popular in the short term but will leave a lot of inefficient capacity and a large bill to pay for the next generation. This instinct of state dirigisme is deeply ingrained in the Mongolian polity, starting with the mythical heritage of Chingis Empire, hardened by 70 years of central planning and the continuing close familiarity and influence of the Russian and Chinese models. There is an implicit assumption that if only political parties manage to agree on a grand industrialization plan, Mongolia can industrialize according to plan and become the next Asian tiger, or rather fashionably "wolf".

The underlying policy instability and vulnerability to populism, often confused with personality politics, is a reflection of these deeper undercurrents of Mongolian socio-economic reality, conditioned by its past. Because of the still dominant socialistic sentiments, the electorate is easily manipulated by the promise of a Scandinavian-type social democracy vision, implicitly espoused literally by all parties and to be delivered through all kinds of transfers despite the small precarious tax base of an emerging middle-income country. These populistic impulses are likely to re-intensify during the electoral cycle, the main two parties already converging on such a Hotelling median voter preference.

Hence, the industrialization plan of next 20-30 years with the estimated costs of proposed projects already running into billions of dollars and the recent adoption of the law on development planning and the hotly debated constitutional reforms to enlarge the Parliament, while strengthening the relative power of the Prime Minister (under an indirectly elected President), none of which address the key institutional weaknesses impeding sound economic policies. Political reforms should focus on curbing inappropriate state interference in the economy and the knee-jerk populist decision making in the era of social media - a phenomenon poisoning democracy and public policy world over.

Therefore, it is the consistency of sound policies rather than political stability that matters. Leaving the enforcement of the FS in the hands of Mongolian politicians did not work -- the opportunistic behavior by an increasingly oligarchic system is simply too strong. Therefore, the fiscal framework needs additional elements of stronger and longer-term mechanism for depoliticizing fiscal decision-making in a more comprehensive conceptualization of fiscal sustainability, in order to resist the vagaries of Mongolia's politics. One idea long-mulled by IFIs and now taken up by Mongolians is that of a SWF, with a

President-initiated draft legislation on a Future Heritage Law already submitted to the Parliament.

However, the current visions envisage a stabilization /saving type fund typical for managing volatility of revenues, and as far as can be judged from the latest draft, might encourage more fiscal fragmentation repeating the problematic experience of the Mongolian Development Bank rather than pulling things together. Indeed, a SWF can easily become an instrument for weakening fiscal discipline rather than strengthening it, unless designed carefully, with a clear focus on the key task. In Mongolia's case, such a SWF should be aimed at dealing with the very specific weakness of the current economic governance arrangements, namely reconciling the public investment spending financed by resource-related revenues, including foreign borrowing, with the requirements of short term macro stability and the absorptive capacity of the economy.

It should be essentially an operationalization mechanism of the public investment planning framework envisaged by the IMF researchers' DIGNAR (Gupta and al, 2015) model that takes into account the low public investment efficiency and slowly changing absorptive capacity of a typical developing country in scaling up investment under an optimal foreign borrowing regime. There is international precedence of similar funds, the closest being Botswana's Pula Fund in which all revenues from diamond exports are accumulated for using them exclusively for public investment and is managed by the Central Bank within a macroeconomic planning framework. This way, the public investment program financed from the resources is placed under a more technical and depoliticized governance.

Such a simple intuitive rule of ring-fencing natural resources-related revenues for public investment, known in Botswana as Sustainable Investment Index, is likely to enjoy substantial support among Mongolians, as it appeals to ordinary people's intuition that exhaustible natural resources should be converted into longer-term development assets such as infrastructure, the deficiency of which is so obvious. Mongolian politicians have also been familiarized with a similar proposal made by Professor Paul Collier of Oxford University on the topic.

Given the prevailing weaknesses in public investment planning and capital budgeting in Mongolia, it will allow a more efficient scaling up of investment with enough "investing in investing" preparations in advance, with automatic stabilization effect. In the meantime, the funds could be parked in relatively liquid international assets for backing the currency or the banking system and, if necessary, to finance certain types of current expenditures with direct impact in removing the bottlenecks impeding growth could be included upon appropriate justification, as is done in Botswana.

Most importantly, the accumulation of revenues in a SWF releases domestic demand pressure, while creating space for sound public investment planning and management. Ideally, it should be embedded within a medium-term fiscal framework, including a rolling multi-year funded capital budget, supported by proper investment appraisal, selection, and implementation capacity. The SWF then could serve as the coordinating tool to integrate resources revenue management with the non-resources fiscal management without complicating the normal fiscal functions of the finance ministry, which is inherently very political. Targeting a structural primary balance based on the smoothed revenues including the non-cyclical components of windfall, as currently done, can still serve as the fiscal envelope. Alternatively, the non-resource current expenditures as a ratio of non-resource GDP can serve as the main anchor of fiscal policy, insulating it from the effects of the fluctuating resource revenues and highly politicized debates about it.

People now understand better the dual nature of the economy and, therefore, why the non-resource economy-based fiscal planning would make sense, although are easily tempted by "patriotic" investment and industrialization projects, irrespective of their realism. Such a rule could guide a more realistic and macro-economically optimum capital budgeting, starting from the base of the politically dictated non-resources current balance and the level of absorptive capacity, while scaling the financing of the development plan to an appropriate level and sustainable external borrowing.

The guidance for its design could be based on the DIGNAR model already calibrated for Mongolia and could be implemented with relevant IFIs technical support. Initial technical capacity can be created from qualified staff of the now-abolished ministry of economy, currently attached to the ministry of finance, or the team who had worked on the OT and TT projects and could be supported by TA from IFIs. Indeed, the IMF's new focus on investment efficiency and the World Bank continuing work on scaling up public investment in Mongolia can be directed towards these efforts. , including a 2013 review of public investment,

The IMF with its regular surveillance over macro policies, as well as the World Bank with its long-standing involvement in fiscal reform in Mongolia seem to be particularly well-placed to take on the task. Their debt sustainability framework and fiscal capacity building responsibilities and sufficient on the ground presence make them ideal partners in this temporary semi-international governance arrangement. If possible their country representatives could be serving on the board of the SWF, even with veto power on the observance of the recommended macro envelope and performance benchmarks of major projects.

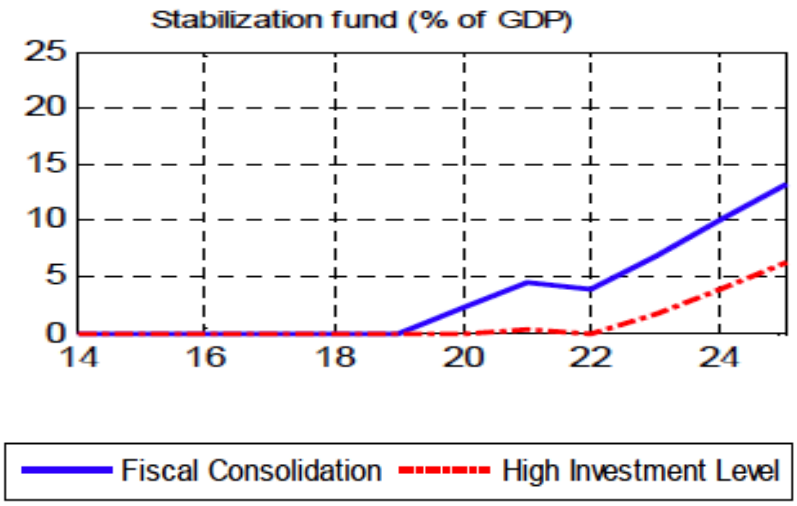
The idea that all resource revenues and external borrowing will be managed by a depoliticized SWF under technocratic management and surveillance by IFI's for exclusive use for growth-enhancing or foreign-exchange-earning public investments would be understood by the public, very frustrated now by the debt situation and the current DBM projects scandals. Maybe only such an apolitical framework can safeguard Mongolia's macroeconomic stability and management of its public investment program in a more responsible and accountable fashion. Indeed its balance sheet can at the same time serve as the core of a holistic sovereign asset-liability management framework, incorporating mineral resources with their PV and development timeline on the asset side and external debt and international reserves, maybe even pensions and other contingent liabilities on the liabilities side.

Such a consolidated balance sheet will make clearer the related risks and therefore more clear the rational of the SWF for sound public investment management. One needs only to remember that the subsidized toxic mortgage loans might be transferred to the social security fund. Thus, it would integrate the public sector balance sheets in a more comprehensive way and clarify the macro and financial trade-offs and of the overall sovereign financial position. For currently hot political issues such as how much to borrow in addition to resource revenues in order to finance the development of growth-supporting infrastructure or projects with forward and backward linkages to domestic industries or how much of the revenues to allocate for debt repayment will become just issues of sovereign balance sheet optimization.

All in all, such a SWF might be very helpful, if feasible. It will help guide and coordinate fiscal and monetary policies and the critical institutions involved in ensuring macro stability, such as the ministry of finance and the Central Bank. More importantly, it offers an opportunity for a decisive regime change in the fiscal area to prevent future slippages Mongolia is so prone to. Its design will also depend on the possible change in the Central Bank functions, as proposed in the next section, but to avoid creating a double budget and inefficient cash management, it could be set up under the ministry of Finance. So far, the proposal of a fiscal stabilization fund to be held at the central bank to accumulate revenues from higher copper and coal prices never materialized and a SWF is only envisaged for the longer run when the FSL structural deficit ceiling tightens and mining revenues rise.

The IMF's DSGE model-based analysis (Gupta & al. 2015) of the macroeconomic impact of various public investment plans, based on a rather realistic level of investment efficiency (65%) and absorptive capacity, shows that a moderate saving would appear from around 2019, to increase to about 12 percent of GDP by 2025, only if the current level of public investment expenditures is cut by 5

percent of GDP. The model was tailored to Mongolia's macroeconomic conditions prevailing in 2014 and assumes that OT2 goes into production on time and copper production increases from 0.2 million tons in 2013 to 1 million tons by 2020. But, under more adverse scenarios of lower copper prices or in the case of further OT2 delay there will be no such savings.



Source: Figure A2 , IMF, 2015, p.43

At present, Mongolia's current and planned fiscal stance is too loose for starting such a Fund. Assuming Mongolia's mineral wealth is $1.5 trillion, as conservatively estimated, and commodity prices will grow in line with their historical average of 3 percent per year and the government earns 20 percent of exports in taxes, a fair intertemporal fiscal smoothing would have required a primary surplus of 5 percent of GDP or an overall surplus of 2 percent of GDP already in 2014-2015 (IMF 2015, p 37). Note also that even the most optimistic scenario of $3 trillion of mineral reserves and 5 percent copper price growth and an improved government revenue take of 25 percent would require the overall deficit be below 3 percent of GDP and the 40 percent debt limit still be observed. Moreover, if the government keeps its current spending plans, the public debt path will become explosive. Therefore, further fiscal consolidation remains an acute necessity to avoid a drastic fiscal adjustment later and even reducing external debt might become necessary for attracting investments or maintaining access to external borrowing.

A Currency Board Arrangement ?

Another way of an effective use of the natural resources windfall is hardening the exchange rate, the key weakness of the current stabilization efforts. Indeed, Mongolia has been interested in exploring the idea of a currency board arrangement since its first introduction in a transition context in Estonia in 1992 and first broached the topic with the IMF in 1997 after its assistance with setting up such a regime in Bulgaria. However, the discussions were abandoned mostly due to the shortage of foreign exchange reserves to back such a regime at the time.

In my view, today's mantra of advocating exchange rate flexibility for almost all countries undersells the historical experience of the institution and its modern role in countries ranging from Hong Kong to Gulf oil producers, African currency unions or Euro area members. Influenced more by the Argentine debacle and the recent problems in Euro periphery countries, people tend to forget how drastically changed were hopeless policy regimes upon introducing a currency board and how different were their before and after performance, or how much faster was reform progress in Euro-accession transition countries. Indeed, many African and Middle Eastern resource-rich countries manage to avoid the sort of monetary policy mistakes made in Mongolia largely thanks to their currency union or currency board arrangements.

In Mongolia's case, it is essentially a side product of the SWF, very complementary to its role as an instrument addressing the key weakness in the area of fiscal management, but with an even stronger potential to improve the policy environment by bringing about a more drastic regime change in the monetary policy area. Of course, its design needs to be well thought through and there are some good international models to learn from. The Hong Kong Monetary Authority has two separate portfolios: one Backing Portfolio for the currency board and the other Investment Portfolio with higher yields including investments in equities. Botswana's Pula Fund is for financing public investment, but the Central Bank maintains a liquidity fund equivalent to 6 months of imports and a withdrawal from the Pula Fund is allowed in emergency situations based on specific criteria. In the case of Korea Investment Corporation, assets can also be qualified as reserve assets and used for BoP purposes. Also, the discouraging experiences of Argentina and some Southern European countries provide good lessons about how to design them as to prevent such failures.

On the other hand, the alternative of an inflation targeting monetary policy regime with full flexibility of exchange rate is a tall order for a country such as Mongolia, as its real experience or recent IMF studies on such regimes in low

income countries (Aleš Bulír and Jan Vlcek, 2015, Marco Airaudo and others, 2016) suggest. Mongolia's micro universe is rather different than the global financial environment. In a transition economy context like Mongolia the money demand or velocity is notoriously unstable and the usual interest rate transmission channel of monetary policy is largely dysfunctional. Therefore, the exchange rate and credit channels of transmission are much more important and the main driver of monetary condition is credit expansion by the banking sector, while the key nominal anchor is the exchange rate. Indeed, the post-transition stabilization in Mongolia had always to rely on a nominal exchange rate anchor and credit control and lasting success was assured only through stabilizing inflationary expectations via fixing the exchange rate, which in turn disciplined fiscal policy. Ignoring this essential role of the exchange rate has been the key weakness of the IMF's approach in Mongolia over the past 3 years, which led to the failure of its mission to prevent the easily expected policy slippages.

Therefore, the role of exchange rate flexibility or loss of monetary policy independence in Mongolia should not be overestimated. For one, Mongolia does not have diversified exports to offset adverse commodity market shocks through exchange rate adjustments and its main imports are either gasoline, whose demand is very inelastic to relative price change, or capital goods and materials that have little in terms of domestic substitutes. Future export expansion is most likely to be highly import-intensive, again diluting the impact of exchange rate adjustment, given the extreme SOE nature of Mongolia and high capital import content of mostly FDI investment. Further financial integration, technological innovation and possible digitalization of money are likely to make exchange rate management even more challenging in the long run.

In principle, fluctuations in the money supply by changes in the BoP balance are less controversial and harmful than pro-cyclical policies, driven by the commodity price effect. In a way, international commodity price-driven terms of trade shocks are more akin to potential output change rather than a demand cycle. Therefore, the potential benefits of an active countercyclical and inflation targeting monetary policy for Mongolia is far outweighed by the harm done by loose incompetent policies, as has been demonstrated almost continuously since the early transition days. With increased capital mobility and international financial volatility, exchange rate flexibility will only increase the real exchange rate volatility, while a hard fix will not only serve as a nominal anchor but will stabilize the real exchange rate as the most important relative price, guiding the economy's industrialization and diversification. In the longer term, it is the stability of the real exchange rate that will help prevent the Dutch disease and, more importantly, best promote investments for sustainable and optimal level of diversification.

Any extreme fluctuation in the money supply by changes in the BoP balance could be mitigated by use of special reserves funds with stringent technical rules of withdrawal exempt from political interference, as was planned but never used in Bulgaria. Indeed, the very existence of a powerful fiscal buffer in the form of the envisaged SWF makes most of the concerns more tractable. Mongolia could create emergency funds out of the saved resources revenues as part of the SWF or CBA design for dealing with monetary emergency or inherited stock problems in the banking sector and other contingent liabilities arising from past quasi-fiscal operations. In any event, commodity fund disbursements when commodity prices are low tend to support BoP needs.

BoP effects also call for more forceful macro prudential management of the credit market and there can be other instruments of money regulation through net credit to the government or the use of reserve requirement changes as in China, in a way compatible with exchange rate stability. Monetary conditions under a currency board are likely to be more driven by the banking sector credit creation autonomously responding to the changing economic situation, not just the domestic credit effect of capital inflows. So managing the balance sheet of banks responsibly under strong supervisory environment is essential for monetary stability.

Thus, a CBA could help tackle in a lasting manner the key weaknesses of Mongolia's monetary policy management, including quasi-fiscal activities and monetization of fiscal deficits, wasteful foreign exchange interventions on essentially foreign borrowing under the guise of a swap arrangement, with interest paid through continuing depreciation, administrative lending to banks , coupled with their weak supervision. On the other hand, sustained FDI inflows, driven by the improved confidence in monetary and financial policies, will lead to faster expansion and deepening of the financial system- a golden opportunity for financial markets development. A CBA would accelerate the process of internationalizing finance, another ambition of the government, through hardening the Tugrik and will do away with the ingrained "Peso problem" of expected depreciation reflected in the high interest rate in conjunction with the inflationary and bad loan premia.

Revealed preferences for exchange rate stability by both politicians and the public, let alone businessmen, are quite strong in Mongolia now, as the importance of fiscal discipline and strong banking sector have been driven home especially over the past year or so. Thus, a CBA as a policy disciplining mechanism is likely to be well-received and could lock in these positive trends. It would be compatible with and conducive to the adjustment scenario, pushed for in Mongolia's by the IFIs. An early start of its operation can be instrumental in bringing about the recommended policy adjustments over the next 2-3 years

such as slowing the credit growth to 12 percent and reducing the comprehensive budget deficit down to 2 percent of GDP to reach a manageable BoP fnancing gap by end 2017 (IMF ,2015, Annex on DSA, p.7).

To get a feel for the short-term feasibility for the introduction of a CBA, we did an econometric forecasting of the key variables in a vector error correction model (VECM) context. Given the fact that China consumes 40-50 percent of world copper supply and accounts for more than 90 percent of Mongolia's mining exports, we put the Chinese indexes and copper price as the most exogenous variables. Although international copper prices are found not to be cointegrated, the Chinese monthly import and export series were cointegrated with the copper price, the Tugrik exchange rate against the US dollar, as well as the monetary base (in the case of imports) or M2 (in the case of exports).

Our forecast for the monetary base for 2016-2018, as end year stock, were TUG 3,551,229, 4,467,736 and 5,619,207 or around $ 2 billion, which is less than what the BoM had already spent defending the exchange rate. The impulse response function shows that one standard deviation shock to copper price results in sharp negative change in Exchange rate. Under the current floating exchange rate regime, an increase in copper price leads to sharp Turgik appreciation for about 5 months before it stabilizes and the monetary base gradually increases for about 7 months before stabilizing at a new higher level.

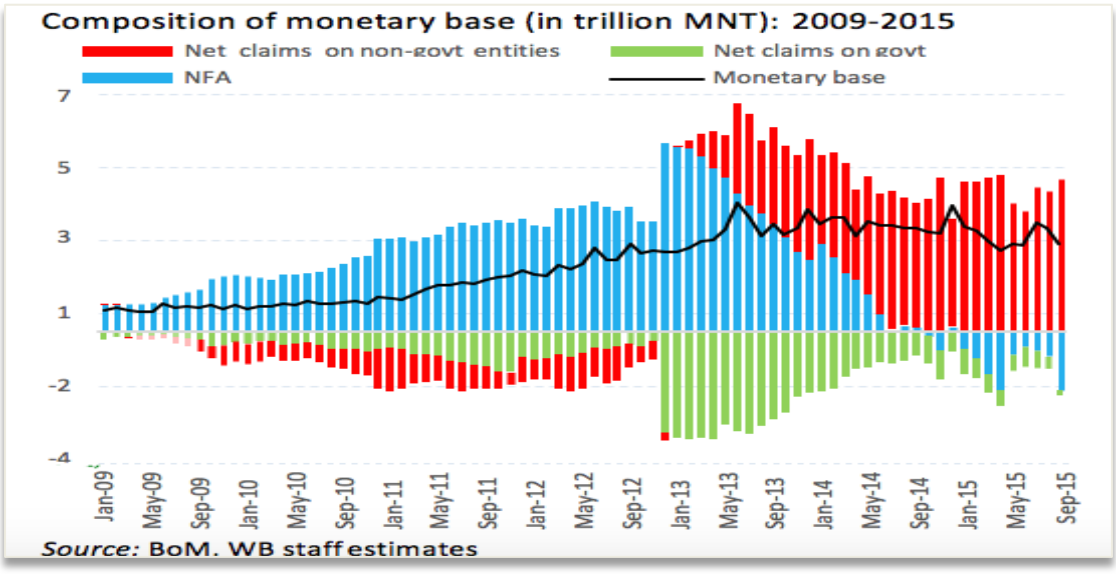


Figure 24, WB (2015), p. 20

The need for international reserves will change depending on the extent of the needed cover and further changes in the assets side of the monetary base by the

likely monetary and BoP developments in the near future. Given the enormous distortions in the Central Bank balance sheet due to its quasi-fiscal activities over the past two years and the exhaustion of the net foreign assets by currency interventions, most of the needed international reserves for the backing of the monetary base might have to be borrowed. Still it might be a more justified borrowing than for other proposed government projects, as the proceeds will be held for backing the domestic currency rather than spent. The Central Bank can also use its swap lines with The Central Bank of China, as it is exactly intended for, or even buy foreign exchange on the market, given the currently estimated overvaluation of the Tugrik and the target of real exchange rate depreciation by 4 percent per year in 2015-2017 (IMF ,2015, Annex on DSA, p.7).

Indeed, from the Optimal Currency Area theory perspectives, tying the Tugrik to the Chinese yuan might make more sense at some point. However, it is not so clear yet what will a more flexible and internationalized renminbi would mean. Given the resistance on the part of some experts, I suggest introducing a US dollar- anchored CBA with a promise to decide in 5 years or in 2020 by general referendum whether to continue as Hong Kong or to convert to the Chinese renminbi or revert to Central Banking gradually as Singapore seems to have done. This would give enough time and flexibility to judge its wisdom without jeopardizing its credibility.

Concluding remarks

Mongolia, or rather Mongolian politicians, have wasted away a rare historic opportunity to bring the country one big step up the ladder of economic development, breaking away from its nomadic animal husbandry-based economic structure. Even worse, due to their populist profligate policies, the country is sliding into slow-moving debt, BoP and banking crises. The large external debt accumulation, made possible only by the prospect of developing its enormous natural resource potential, will not be cancelled as the old Soviet debt, but will be repaid from future export earnings.

Realistically speaking, only the success of the two big mining projects, without any further disruption, can reverse the situation. They are still viable despite the fragile outlook of the international commodity markets, but only drastic and lasting improvements in economic policy-making can restore investor confidence.

However, the failure of the current policy framework is conditioned by deep-seated weaknesses in the country's economic governance philosophy and operational capacity, which will continue to thwart the country's progress unless

drastically changed. That concerns first of all, the role of politicians in economic decision making. Currently, state is captured by populist politicians of oligarchic parties and vested business interests that compete for rent-seeking opportunities, while ignoring many of the basic everyday duties of the state. The accompanying state interventions are distorting market signals, harming the development of the private sector, while supporting unviable but politically-connected projects , ultimately reversing Mongolia's transition achievements.

Since domestic politics are so deeply locked in inefficient and wasteful policies, additional non-standard constraints, possibly temporary, might be needed to ensure sound economic management of the resources wealth for more efficient outcomes. The proposed SWF and the CBA are aimed at such a qualitative regime change in macroeconomic policy-making to depoliticize the governance of key macroeconomic institutions.

The establishment of the SWF for managing the resources revenue exclusively for critical public investment needs with the help of neutral and professional assistance of the IFIs, at least for a few years, will help Mongolia protect what revenue it gets from the mining sector. The IFIs role will be strictly limited to imposing an appropriate overall envelope for public investment, consistent with macro-stability and absorptive capacity, while screening out inefficient projects. It could induce better fiscal planning, explicitly linking current expenditures to Fiscal profligacy will, at long last, be brought under control, despite Parliament's dominance over the budgetary process and non-resource tax revenues, with surplus over the cycle or sound short-term borrowing. That, in turn, would make the government a creditworthy borrower, paving the way for spontaneous development of a genuine market of government bonds as well as the bench mark yields for private capital markets.

Similarly, the introduction, possibly temporary, of a CBA will, at long last, make politicians aware of the reality of the binding external constraints and break the Central Bank's wrong-headed activist instincts, inconsistent with market economy principles. It should force the Central Bank to respect its legal obligations to restrain from financing budget deficits or lending to non-banks, while providing monetary and financial stability for the economy. The ensuing stability of the exchange rate, low inflation and interest rates and hard budget constraint on the banks will induce accelerated banking sector reforms and financial market development.

Hardening the budget constraint of the government and the central bank will percolate through the economy, restoring market discipline, thus promoting sustainable transformations. Especially, the CBA will close off the avenue for reverting to the usual quasi- fiscal activities by the Central Bank and support

fiscal responsibility, including at local levels and stop inefficient allocation of resources into uncompetitive projects that only survive thanks to the prevailing distortions.

The current de-jure flexible exchange rate suffers from all the disadvantages of poorly-anchored expectations and small but open financial markets and inelastic exports and imports and wields the biggest disruptive effect on the business sector, with added uncertainty of frequent ad-hoc interventions. A stable long-term policy regime based on a highly-visible and credible CBA is much more important for Mongolia than supposed short-run benefits of counter-cyclical demand management and exchange rate flexibility. Any emergency situation or large terms of trade shock could be managed by the judicious use of special foreign exchange funds, created under the depoliticized professional SWF governance to calibrate liquidity for banks.

The extreme small open economy nature of Mongolia and its severe geographical isolation compounded by poor infrastructure mean that industrialization is likely to be dictated by the pace of its private sector integrating itself into international value chain niches, mostly relying on export-oriented FDI, according to its slowly evolving comparative advantage, rather than government-subsidized export development. Therefore, ensuring the success of the obvious and extreme comparative advantage of the mineral economy at the current stage and improving the functioning of a realistic price signal for efficient allocation is the best use of available opportunities to unleash Mongolia's future potential for diversification.

In contrast to the misplaced over-emphasis on import-substituting industrialization in a tiny domestic market of Mongolia, the very stability of the value of the domestic currency and of the real exchange rate will help prevent the Dutch disease and promote export diversification. Moreover, the international and regional environment of Mongolia is becoming even more competitive, with excess capacity in all sectors of manufacturing following China's slowdown, which makes state-led industrialization even less realistic option. However, the proximity of the vast and expanding Chinese market offers unlimited opportunities and at some point the CBA could change its pegging from the US dollar, the currency of denomination of the resource revenues to the Chinese renminbi, if it manages to achieve a legitimate hard currency status.

References

Aleš Bulír and Jan Vlcek (2015) Monetary Transmission: Are Emerging Market and Low Income Countries Different? IMF working paper WP/15/239

Gupta, Pranav, Bin Grace and Jiangyau Yu (2015). From Natural Resources Boom to Sustainable Economic Growth: Lessons for Mongolia. IMF working paper WP/15/90.

IMF (March 19, 2015) Mongolia Staff Report for the 2015 Article Consultation available at the IMF website.

Klein, Michael, W and Jay.C.Shambaugh (2010) Exchange Rate Regimes in the Modern Era, MIT Press

Marco Airaudo, Edward F. Buffie, and Luis-Felipe Zanna (2016) Inflation Targeting and Exchange Rate Management in Less Developed Countries. IMF Working Paper WP/16/55

Appendix:

The econometric analysis

Data

We use monthly data that covers the time period 2001M12-2015M2. The data coverage is restricted by availability of Mongolian M2 and Monetary base data. Exchange rate and monetary base data are IMF International Financial Statistics (IFS, November 2015). Exchange rate is expressed as Mongolian Tugriks per USD (end of period), and monetary base is in Tugriks (end of period)

Copper price data (in USD) is from LME. We use the copper price as a proxy for Mongolian export of natural resources. For the price data, London market price is used, since Chinese market monthly data is not available.

Why Chinese data?

- Regarding copper-price as exogenous to the Mongolian economy
- However, copper price for Mongolia is strongly influenced by the Chinese economy, and even the international copper price is, since around 40-50% of the world copper is consumed by China.
- Moreover, more than 90% of Mongolian mining export goes to China.

The data analysis is done using Stata (version 13).

Econometric methods

Vector Error Correction Model was constructed to generate level-data forecast. Chinese index and Copper price is set as the most exogenous (means, simply, Chinese import/export and then copper price is in the first and second column of the variable vector) in 4 variable VAR models. No structural restriction imposed in the matrix,

Forecasting is done using the estimated vector for 36 months

We considered two versions of models:

Impact of copper-price on exchange rate and m2,

Impact of copper-price on exchange rate and monetary-base.

Given the fact that China consumes 40-50 percent of world copper supply and accounts for more than 90 percent of Mongolia's mining exports, we put the Chinese indexes and copper price as the most exogenous variables (in the first and second columns of the variables vector) in our four variable vector error-correction model, estimated as:

LnChineseExport – 0.166 LnCopperPrice + 0.446 LnExchRate – 0.534 LnM2 – 5.32

(0.058)*** (0.202)** (0.048)***

Standard errors are in parentheses. *** - significant at 1 percent, ** -significant at 5 percent levels respectively.

For the second model, we have a following cointegrating equation:
LnChineseExport – 0.652 LnCopperPrice - 0.4269 LnExchRate – 0.227 LnMonetaryBase + 0.167

(0.048)*** (0.240)* (0.049)***

Standard errors are in parentheses. *** - significant at 1 percent, * -significant at 10 percent levels respectively.

Model 1. The first model has four variables: copper price, Chinese imports, Exchange rate, and M2, all in natural logs. We determine the number of cointegrating equations.

Max Rank	**Parms**	**LL**	**Eigenvalue**	**Trace Statistic**	**5% Critical Value**
0	36	1030.0706	.	53.0864	47.21
1	43	1047.9533	0.20488	17.3212*	29.68
2	48	1053.3977	0.06742	6.4323	15.41
3	51	1055.7874	0.03017	1.6529	3.76
4	52	1056.6139	0.01054		

Because the trace statistic at Rank = 1 of 17.3212 is less than its critical value of 29.68, we cannot reject the null hypothesis that there are one or fewer cointegrating equations. Lag order is estimated to be 3.

Model 2. The second model has four variables: copper price, Chinese imports, Exchange rate, and Monetary base, all in natural logs.

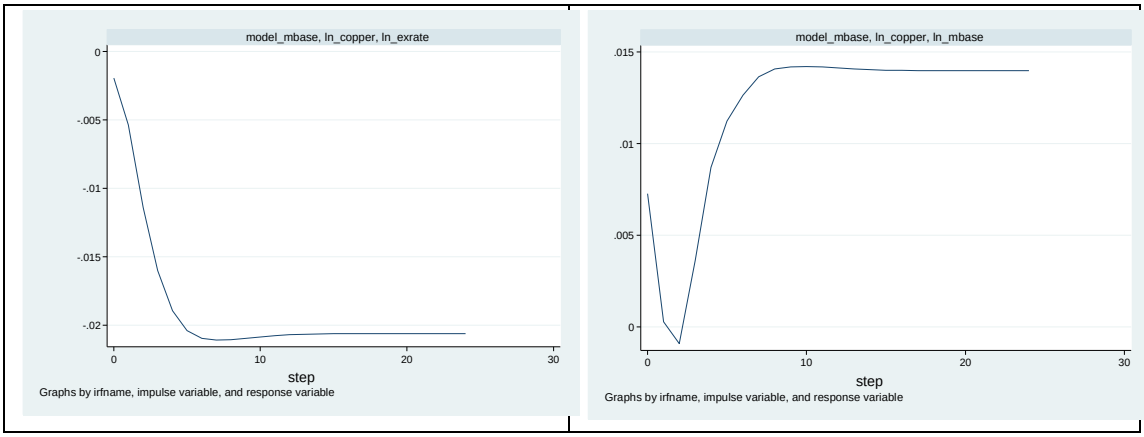
Max Rank	Parms	LL	Eigenvalue	Trace Statistic	5% Critical Value
0	36	895.39649	.	59.3943	47.21
1	43	917.27061	0.24455	15.6460*	29.68
2	48	921.46273	0.05233	7.2618	15.41
3	51	924.86406	0.04267	0.4591	3.76
4	52	925.09362	0.00294		

Maximum rank is 1 Maximum rank 1 (failed to reject the H0 of 1 cointegration at most). Lag length is 3.

Mongolian macroeconomic indices were found to be not cointegrated with the copper price, but were cointegrated with Chinese imports (in a model with M2) and with Chinese exports (in a model with monetary base). Chinese monthly import and export series were cointegrated with the copper price, the Tugrik exchange rate against the US dollar, as well as the monetary base (in the case of imports) or M2 (in the case of exports).

Impulse response (using orthogonalized function) was calculated for 24 months.

Figure 2. OIRF in a model with Monetary Base



Orthogonalized impulse response function shows that one standard deviation shock to copper price results in sharp negative change in Exchange rate. In our case, an increase in copper price leads to sharp Turgik appreciation for about 5 months out before it stabilizes. Monetary base gradually increases for about 7 months out before stabilizing at a new higher level.