

## *The Return of the Feldstein-Horioka Puzzle*

Stephen L Jen & Fatih Yilmaz

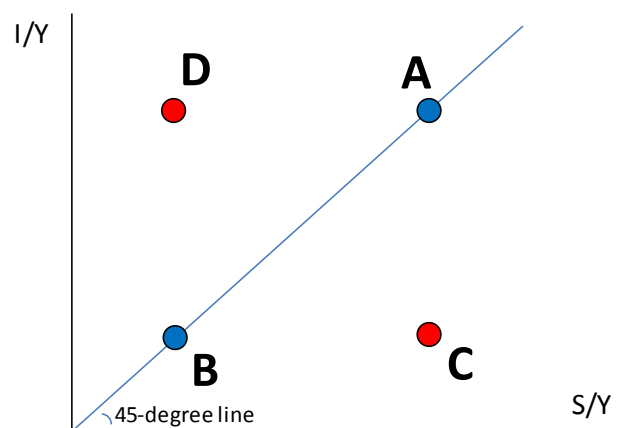
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*Bottom line: Countries save and invest. The gap between the savings rate (savings-to-GDP ratio) and the investment rate (investment-to-GDP ratio) is the current account balance. In a 1980 paper, Professors Feldstein and Horioka first documented the odd pattern that, based on the data from the 1960s and the 1970s, there seemed to be very limited appetite for the savings surplus countries to lend to the savings deficit countries. Our note documents that this FH Puzzle temporarily disappeared in the 2000s, but has returned recently. We make these points. (1) Fixed exchange rate regimes are dangerous. They gave the false impression that international lending was safer than it actually was. The Great Recession and the European Crisis exposed this false impression. (2) Capital account flows have become much more important than current account flows in determining exchange rates. This is partly why central bank actions and rhetoric have been such powerful drivers of the currency markets since 2008. (3) There are tradeoffs between global growth and global imbalances, i.e., maximizing global growth may necessarily lead to widening global imbalances, and compressing global imbalances could come at the expense of lower global growth. (4) At close to 50% of GDP, China's savings- and investment-rates are too high. There are multiple reasons for such high S/Y and I/Y rates in China. In addition to the lack of a social safety net, the still-dominant role of the SOEs (state-owned enterprises) has also been a major source of distortions. Artificially low real interest rates are also a problem in China. Investors need to understand that China's long-term structural challenges require the government to resist the short-term temptation of resorting to the simple Keynesian stimulus or aggressive monetary easing. (5) Genuine deleveraging, i.e., both households and public deleveraging, in developed countries will likely lead to both a rise in their savings rates and a fall in their investment rates. The net effect on economic growth is negative.*

**The basic idea of the FH Puzzle.** Economic theory suggests that international capital should move to the countries that offer the highest return, and the capital flows would continue until the premium on the investment return is arbitrated away. According to this idea, there should therefore be no correlation between a country's savings rate and its investment rate. In practice, however, there was very high correlation between the savings and investment rates of countries. That was the finding of Martin Feldstein and Charles Horioka.<sup>1</sup>

We can explain the concept using the simple diagram below.

Assume, for simplicity, that there are two islands in the world (**A** and **B** in the diagram), and they don't trade or interact with each other. Since islands **A** and **B** have no interactions with each other, any investment that takes place on each island would need to be fully financed by its own savings. So the investment rate (investment in percent of GDP, or  $I/Y$ ) is equal to the savings rate (savings in percent of GDP, or  $S/Y$ ). The two islands should sit on the 45-degree line, with island **A** saving more and investing more than island **B**.



Source: SLJ Macro Partners.

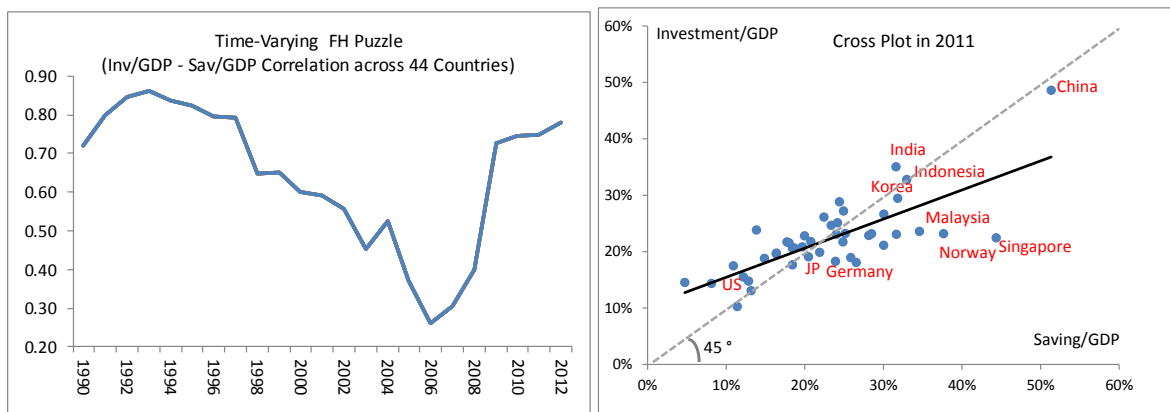
Now assume that the world has two islands that actively trade and interact with each other. If an investment project is considered sensible, it could be financed by both the savings on the island in question or be borrowed from the other island. Island **C** in the diagram denotes a country that has a high savings rate but a relatively low investment rate, while island **D** has a low savings rate but a high investment rate. Island **D**, therefore, runs a current account deficit and borrows from island **C**, which is the creditor that runs a current account surplus.

<sup>1</sup> Feldstein, Martin; Horioka, Charles (1980), 'Domestic Saving and International Capital Flows,' Economic Journal 90 (358): 314-329.

With free trade and full capital mobility, therefore, one would expect the correlations between S/Y and I/Y to be low. With zero trade and no capital mobility, the correlations between S/Y and I/Y should in theory be 1.0 – the slope of the 45-degree line.

Professor Feldstein and Horioka were surprised to find that the savings-investment correlation in their sample was 0.89, suggesting the world might not be nearly as open as it seemed. In other words, the world’s economies were behaving as if they were islands that rarely traded with each other and unwilling or unable to lend or borrow from each other. The global tolerance for out-sized current account (savings-investment) imbalances was remarkably limited – much more so than theory suggested. This odd finding has been referred to, in the economics profession, as the Feldstein-Horioka (FH) Puzzle.

**How the FH Puzzle fizzled in the 2000s.** Using more recent data, we have computed the time-varying savings-investment correlation for 44 countries, updating the calculations by Profs Feldstein and Horioka done in 1980. The chart below shows that the FH coefficient declined sharply between the mid-1990s and 2007 – the eve of the Great Recession. Since then, there has been a very sharp rise in the S-I correlation, from a low of 0.25 in 2007 to close to 0.80 now, almost the same level as what Feldstein and Horioka found more than 30 years ago. The chart on the left below shows this dramatic swing in the last business cycle.



Source: IMF and SLJ Macro Partners.

The chart on the right above shows a cross-sectional plot of the savings and investment rates of various countries in 2011. The ‘centre of mass’ of this chart is around 22/22, i.e., the weighted average across the 44 countries in our sample has a S/Y and I/Y rates of around 22%.

We have these thoughts.

**Thought 1. Fixed exchange rate regimes are dangerous.** We believe that a dominant theme during the last business cycle was the presence of two powerful currency unions: (i) the EMU, and (ii) the ‘de facto dollar zone.’

The European Monetary Union suppressed currency volatility within the zone and substantially stabilized the currencies of the non-EMU EU member countries. This suppression of currency volatility had obvious microeconomic benefits, but came at the expense of macroeconomic mis-alignments – many of which are now obvious, though they were disputed by the Euro-philes a decade ago. Within the EMU, the surplus countries were more than willing to finance the deficit countries, as investors erroneously thought that the currency or the balance of payments (BOP) risks were nil, effectively underwritten by the political and institutional commitment to the EMU. As a result, the S-I correlation within the EMU collapsed, reflecting the increased willingness of investors to finance large current account deficits in the EMU.

Similarly, there was a second currency union in operation, with the US dollar at the centre and many Asian currencies being pegged or heavily managed vis-à-vis the US dollar. The Chinese RMB peg to the dollar only began to be gradually dismantled in July 2005; and this process is not yet complete. The impact of the perceived low currency volatility is, similar to what happened within the EMU, a willingness for the peripheral countries in this de facto currency union (China and other Asian countries) to finance the savings-investment deficit of the core (the US).

Fixed exchange rate regimes are stable until they are not. Every single currency peg in history has been broken one way or another, and sooner or later. This is because currency pegs are usually made brittle from, in addition to external shocks that are beyond the control of policy makers, the political, institutional, and social weaknesses that invariably arise over time. In modern history, Hong Kong is an exception in that its economy has remained exceptionally flexible to accommodate the sometimes violent swings in interest rates to re-establish economic and BOP equilibriums. Most other countries are not as flexible as Hong Kong is, and even Hong Kong, with the rising influence from China, has been forced to contemplate the appropriateness of the currency board regime.

In sum, a good part of the temporary decline in the S-I coefficient in the last business cycle, in our opinion, was due to the distortions arising from the two

currency unions dominating the global economy. The second currency union – the de facto dollar zone – is slowly being dismantled, but the first currency union – the EMU – will likely remain a source of macro volatility for years to come. Investors and policy makers should be grateful that one financial bomb – the de facto dollar zone - has been diffused; one could only imagine how severe the global financial crisis might have been had Beijing not abandoned the hard peg to the dollar at 8.3 back in 2005.

**Thought 2. Capital account flows are the main drivers of exchange rates.**

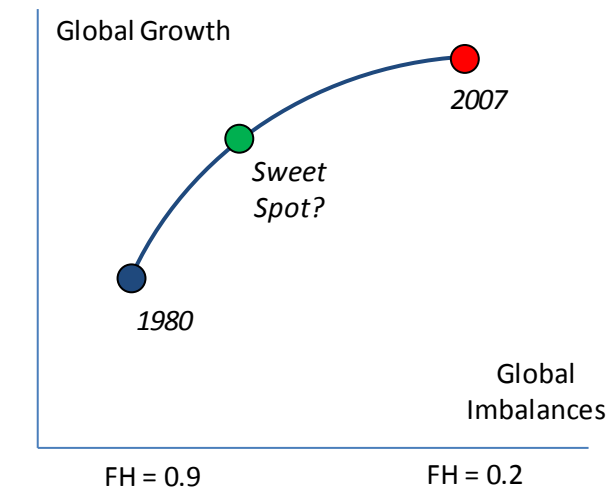
The foreign exchange markets are different from equities and bond markets. One way the FX markets are different is that exchange rates are driven by two types of flows: flows that are dictated by ‘current’ conditions (e.g., exports, imports), and flows that are dictated by ‘expected’ conditions (e.g., FDI, equity, and cross-border bond flows). This is why, in the balance of payments table, exports and imports are considered parts of the ‘current account’. If the global appetite for financing large S-I imbalances has indeed dwindled back to the norm of the pre-1980 period, then CA imbalances should no longer be the dominant driver of exchange rates. In other words, if countries are forced to run CA balances that are close to zero than 5-10% of GDP, then capital account flows should dominate the determination of exchange rates. (We should note that some countries will likely continue to run large savings surpluses - e.g., Singapore, Norway, and Malaysia – and their currencies are likely to be supported due to this structural bias.) Indeed, the BIS surveys do suggest that capital account flows have become increasingly important over the years. A decade ago, the ratio of capital account flows to the current account flows was about 35:1. These days, the ratio is higher than 50:1. In other words, for every USD100 million in international flows of all types affecting the currency markets, flows related to the settlement of exports and imports account for less than USD2 million. As a result, extreme monetary policies that influence expectations could have an outsized effect on exchange rates in the current set-up. The policies of the Fed, the ECB, and other central banks may, in theory, play a relatively bigger role in the currency markets than, say, five or seven years ago, prior to the Great Recession, and before the return of the FH Puzzle.<sup>2</sup>

**Thought 3. Tradeoffs between global growth and global imbalances.** There seems to be a tradeoff between the overall growth rate of the world economy

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<sup>2</sup> Central banks’ reserve accumulation and management strategies have also become more important, because of the return of the FH Puzzle.

and global imbalances, i.e., to really maximize the headline global growth rate, as was the case in the mid-2000s, the world had to accept out-sized C/A imbalances. On the other hand, if the world is less tolerant of financing large C/A imbalances, then global growth is likely to be *structurally lower* than it was in the 2001-2007 period. It seems that the world needs to find a ‘sweet spot’ somewhere on this concave frontier.



Source: SLJ Macro Partners.

There are three sub-thoughts. First, the United States – a full monetary and political union – is in theory more efficient in the sense that it can withstand large internal BOP imbalances so as to maximize the overall growth rate of the nation. The structural integrity of the EMU, on the other hand, is less robust because of the lack of a full political union. This makes it difficult for the peripheral countries to run large C/A deficits and therefore the structural growth rate of the EMU is likely to be a bit lower than it was before the Great Recession and lower than it could be if there were full political union. Second, global economic growth is likely to be lower in the years ahead, compared to the 2001-07 period. There are still those (like the doves at the Fed) who argue that the structural growth rates have not changed because of the Great Recession. We don't find this argument persuasive. Third, extending from the first point above, if, hypothetically, the US and China were a full political and monetary union, it would be the most powerful entity in the world and this de facto dollar zone could dominate the global economy. The problem, of course, is that this alliance would only be sustainable if there were full political union.

**Thought 4. What China needs to do.** In one of the charts above that shows the I/Y and S/Y rates of the 44 countries in our sample, it is clear that China and the US are outliers, with China having extraordinarily high savings and

investment rates, while the US has remarkably low savings and investment rates. To achieve structural sustainability, both countries need to gradually move to the centre in the chart. However, the policies in the US are precisely aimed at impeding this move: the extremely aggressive Fed policies are aimed at encouraging the private sector to re-lever up, while the public sector is reluctant to increase its savings rate. In China, the high savings and investment rates are partly due to the lack of a social safety net. But they also reflect (1) artificially low real interest rates and (2) still excessively large presence of state-owned enterprises (SOEs) which have trapped profits and distorted investments in China. Specifically, bank credit has been directed to SOEs and the costs of credit to these SOEs have been artificially depressed. Without the need for the SOEs to surrender their profits and dividends to either the state or the general population, the SOEs have been incentivized to engage in excessive investment. The needed structural reforms in China are familiar: one of which is to establish a link between the ownership of the SOEs and the wealth of the households. One possible way to do this is through further privatization of these entities. The problem is that the SOEs and the special interest groups that are aligned with them have become so powerful that it is no longer clear that the central government in Beijing can stand up to them. Further, many of the SOEs have derived much of their profits through real estate investments that are disguised as general investment. The risks of the property cycle being a bubble are severe, because potential bursting of such a bubble could severely undermine the SOEs and general economic activities. This is one main reason why Beijing has been so firm in trying to cap the property markets and has refrained from resorting to aggressive monetary stimulus. In short, the structural reforms China needs to undertake conflicts with the short-term temptation to stimulate the economy. Investors need to understand this fundamental conflict in China.

**Thought 5. De-leveraging.** In an earlier note, ‘What Deleveraging?’ (October 12, 2012), we pointed out that, while private sector deleveraging has indeed been taking place in many developed countries, public sector leveraging has more than offset this trend. In fact, we find that for every 1% GDP worth of private sector deleveraging since 2007, we have seen +2.5% GDP worth of public sector leveraging. The net result is that the overall debt-to-GDP ratios are now *higher* than they were in 2007. The debate on Keynesian fiscal stimulus has familiar implications for short-term growth. But this discussion is also relevant in the context of savings-investment balances. In the chart above on the S/Y and I/Y rates, one sees that the trend across countries is a bit ‘flatter’

than the 45-degree line, implying that the countries with lower than average savings rates tend to have investment rates that are higher than their savings rates, while those with high savings rates tend to have net savings surpluses. In other words, the variation in the savings rates across countries seems to be higher than the variations in the investment rates. In thinking about the subject of medium- and long-term public debt control, it might be useful to think that that goal is effectively an attempt to move to the right in the S/Y and I/Y chart. While this is the theoretical goal of moving to the right in this chart, in practice, it is likely to entail a move *down* in the chart as well, i.e., a decline in the I/Y rate as well. Thus, for countries like Spain, Italy, and the US, over time, we will likely see a rise in the S/Y and a reduction in the I/Y rate. The net result is *lower* economic growth rates.

**Bottom line.** During 2001-07, the world's tolerance for high C/A deficits increased sharply. But since 2008, this trend has completely reversed, with the FH S-I correlation returning to the pre-1980 level of around 0.8, from a low of 0.25 in 2007. We see several important implications of this sharp rise in the S-I correlations around the world: pressures on fixed exchange rate regimes will remain high; global trend growth will likely decelerate; and cross-border capital flows will be increasingly important drivers of exchange rates. All of these observations are consistent with our expectation that the world's 'GDP Sharpe ratio' – the ratio of the expected economic growth rate to the volatility of growth – will likely be inferior to that prior to 2008.



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