Comments on "Monetary independence in a financially integrated world: what do measures of interest rate co-movement tell us?"

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The nub of the current debate about whether macroeconomic policy faces the traditional Mundell trilemma or the more recently proposed dilemma of Rey (2013) rests on whether the benefits of open financial markets are overwhelmed by the constraint that international financial flows impose on the domestic economy. If an important channel of monetary policy impact is via the domestic long-term interest rate, then accepting that international conditions can have an impact on that rate creates a key constraint for domestic policy makers. Rey (2013) goes as far as to say that it requires capital control measures in order to cope with the problems that financial openness induce for the economy. Obstfeld (2015), however, argues that in all probability the reality is that economies lie somewhere on the spectrum between the trilemma and the dilemma.

The paper by Kharroubi and Zampolli (2016) examines the empirical evidence relating to whether there are high degrees of interest rate pass-through along a number of dimensions. They examine not only the issue of the differential rates of international pass-through at short and long maturities, as undertaken in Obstfeld (2015), but also the classic question of pass-through along the term structure, in the tradition of Cook and Hahn (1989), Kuttner (2001) and Thornton (2014), for example. In combining these three mechanisms they are able to present a triangulation of the empirical evidence on the trilemma versus the dilemma.

The role of exchange rate volatility and financial openness

The focus of this paper is whether there are observable variables that would explain the range of sensitivities to the transmission of interest rate shocks, either internationally or along the domestic term structure. Taking the first-stage estimates of betas for each country, they regress these against a range of explanatory variables. The ones of primary interest here are the exchange rate volatility index and the financial openness index. In general, the results seem to support the importance of these explanatory variables, but it is not easy to get a ready interpretation. Table 1, for example, summarises the signs of the significant explanatory variables in the most general and the second most general specifications of these regressions, drawn from Tables 2 to 4 in Kharroubi and Zampolli (omitting the non-linear term which will be discussed later).

Table 1 makes clear how difficult it is to draw general conclusions from their empirical work. Comparing the results in columns (1-3) with the corresponding columns in (4-6) and columns (7-9) with (10-12) in Table 1, the first observation is that

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there seems to be strong differentiation between the results for the pre-crisis period and for the whole sample. The only consistency that seems to be maintained is for the first specification looking at the long rates – that is columns (2) and (5) of Table 1 have a similar pattern of signs in the significant variables. In this case, this means that the international transmission of long rates is consistently statistically affected positively by the financial openness index, negatively by exchange rate stability, positively by a higher average interest rate differential and negatively by volatility in the interest rate differential. These results seem sensible.

In the other cases, there are sometimes dramatic changes between the pre-crisis and full-sample outcomes. It would be informative to test a nested specification to see whether the loss of significance is due to an additional, offsetting effect which would begin to play only in the post-crisis period, perhaps due to a regime shift as posited for global liquidity by Shin (2013), or a permanent change in the transmission mechanisms between different markets as demonstrated in a different context by Dungey et al (2010). If two regimes are conflated, then the full sample results do not reveal the significant changes between regimes, instead these are masked.

Table 1

	Specification of column (4) in tables 2-4						Specification of column (5) in tables 2-4					
	Pre-crisis			Full sample			Pre-crisis			Full-sample		
	short (1)	long (2)	term (3)	short (4)	long (5)	term (6)	short (7)	long (8)	term (9)	short (10)	long (11)	term (12)
Financial openness		+	-		+		+		-	+		
Ex rate stability	+	-	+	+	-		+		+	+		
Inflation		-					+			-	-	+
Inflation volatility		+	+				-		+		+	-
GDP growth				-				-		-	-	
Output growth volatility									-		-	
Irate diff	-	+	+		+							
Irate diff volatility		-	-		-							
CB assets							-				-	+
Debt issuance							-			+		
FX reserves									+		+	
Liabilities							-		+		+	
Assets							+		-	-		

The second issue, shown in Table 1, is the rather dramatic shift in what is important in explaining these betas between the two specifications of the paper. The specification in columns (1-6) includes interest rate differentials and interest rate differential volatility, but not the remaining greyed out variables. The specification in

columns (7-12) removes these interest rate variables and replaces them with a number of alternative variables mainly related to the stocks and flows of financial assets (consistent with the view that these should be included to understand the determination of domestic economic conditions, as put forward by Rey (2013), and Godley and Izurieta (2004, for an example of the earlier literature in this vein). Notably again, there is little correspondence between the statistically significant explanatory elements of the betas for each of the three cases (short- and long-term interest rates, and the term structure) between the pre-crisis sample and the full sample in this specification either.

More importantly, there is a considerable difference between the significance of financial openness between the two specifications in the left- and right-hand panels of Table 1. In the pre-crisis period, the first and second specifications agree only that financial openness has a significantly negative effect on term structure pass-through. In the full sample period, the two specifications agree only that there is no impact of financial openness on term structure pass-through. That is, the only evidence here is that financial openness has a consistent relationship with term structure pass-through but that this relationship seems to have altered between pre-crisis and post-crisis periods. Pinning this down further would seem useful. Prior to the crisis, term structure pass-through was being negatively affected by financial openness; that this relationship disappeared seems to run counter to the arguments that the dilemma would restrict the effectiveness of monetary policy. What precisely has happened to this term in the post-crisis period? Respecifying the model to use interaction dummies could allow for a more formal exploration of this question.

In terms of the relationship with exchange rate stability, there is agreement that the pass-through of international short rates is positively affected by increased exchange rate stability in all specifications, both pre-crisis and for the full sample. The crisis does not seem to have affected this aspect of the international transmission process. The beta on the term structure pass-through is consistently positive in the pre-crisis period. This suggests that a higher beta is obtained with a more flexible exchange rate regime, which might work against the argument of the dilemma. However, in the full sample period this has become insignificant. If we could determine that there was a significant change in direction in the second part of the sample, perhaps through an interactive dummy specification, then this might provide some support for the dilemma hypothesis as binding in the post-crisis period.

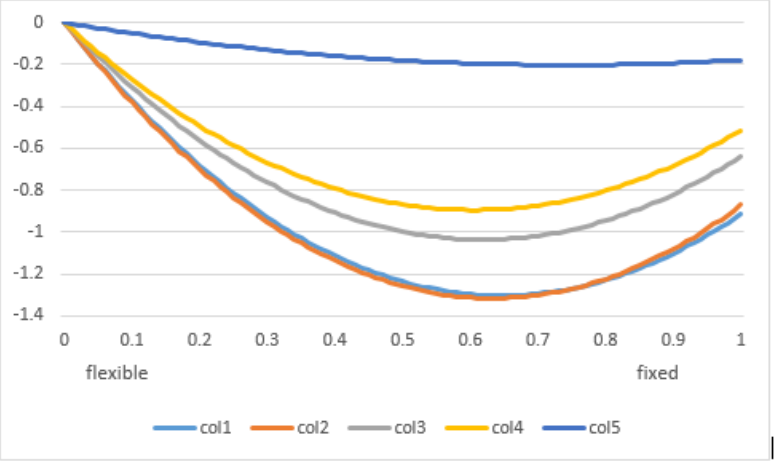
The beta on the transmission of long rates has different signs for the two specifications. In the first specification, the long rate pass-through beta is negatively affected by exchange rate stability, but in the second it is unaffected. This result is consistent across both sample periods. That increased exchange rate stability would negatively affect the transmission of the long rate seems rather unusual and is addressed by the addition of a volatility term. The addition of the squared exchange rate stability term to the long interest rate and term structure pass-through specifications in Tables 3 and 4 in Kharroubi and Zampolli provide a non-monotonic element to the analysis. In the long term specifications, this has a consistently significantly positive coefficient, and in the term structure pass-through it has a consistently statistically significant impact only during the pre-crisis period – for the whole sample it is insignificant.

The form of the non-monotonicity of these specifications is rather less straightforward than may at first appear. Figure 1 plots the non-linearities estimated in Tables 3 and 4 for the five different specifications used in the paper (labelled with

the corresponding columns for each table in Kharroubi and Zampolli (2016)). It is clearly evident that the degree of estimated non-linearity varies considerably for the long rates, so that drawing conclusions about how important this effect is requires some certainty about the appropriate functional form. With this degree of uncertainty about the impact of non-linearity, it would be very easy to overstate the gains from adopting a moderately flexible exchange rate regime.

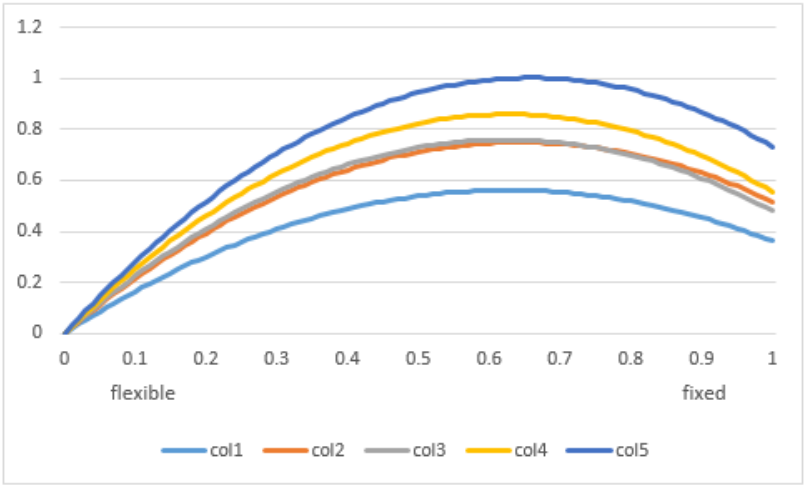
Non-linear form of exchange rate stability – pre-crisis period Figure 1

A. Long rate equations in Table 3 from KZ



The beta for long rates is negatively related to exchange rate stability

B. Term structure equations in Table 4 from KZ



The beta for the term structure is positively related to exchange rates overall

Returning to the issue of whether one should prefer the specification (4) in Kharroubi and Zampolli (given in the left-hand panel of Table 1) or specification (5) (given in the right-hand panel of Table 1), there are a number of important considerations. First, specification (5) looks more general at first, and has in most cases a higher R-squared explanatory power. The parameter estimates on these statistically significant additional variables are very small and seem unlikely to be

economically meaningful. However, they are contributing to a specification that often no longer finds the financial openness variable to be significant, and this is important to investigating the dilemma versus trilemma debate. One fairly likely explanation lies in the bounded nature of the financial openness and exchange rate stability indices. These two indices are both bounded (0,1) and are being used as determinants of a continuously variable beta (it would be interesting for the paper to report the range of betas estimated). Specification (5) adds a range of further continuous variables to the estimation, providing the potential to match the variance in the dependent variable more easily. This may be spurious and simply an artefact of the properties of the data, rather than implying that the financial openness and exchange rate stability results are less evident.

Empirically the paper demonstrates that short rates are more independent than long rates, that the short rate pass-through to long rates is not perhaps as strong as one would like, and that variation in the pass-through can be linked to financial openness and exchange rate stability (non-monotonically). These technically challenging questions are addressed in Kharroubi and Zampolli with a nice contribution to controlling for commonality.

Links to theory

Resolving the problems posed in this paper calls for a link to some underlying theoretical specification. The main variables involved in the specifications, inflation, growth, and exchange rate and interest rate volatility are not uncommon in macroeconomic models of monetary policy making. Kharroubi and Zampolli find that the beta decreases when markets are more financially open and more volatile, but additional insights from other works of the literature could help refine the arguments; first, Thornton (2014) shows that beta is overestimated unless controls for ambient news are included, and, second, Ellingsen and Soderstrom (2001) show that the beta decreases when central banks are more averse to inflation.

Ellingsen and Soderstrom (2001) posit a model that changes in monetary policy affect the term structure in two distinct ways. The first suggests that the central bank has new information on the state of the economy which it relays to the market via its policy actions. The second puts forward that the central bank could reveal a change in preference weightings on its target variables – empirical evidence as to the validity of this model is available in Claus and Dungey (2012) and (2015). An alternative model would be to consider whether the networks of firms and financial institutions processing and absorbing information about the success of firms' real investment decisions constitute a major source of transmission of policy shocks, as in Acemoglu et al (2015). These two exemplar models would have quite different implications with respect to whether the policy problem concerns the connectivity structure of global financial institutions or is a direct result of domestic monetary authorities taking account of foreign policy changes. Either way, a theoretical framework is clearly needed to reconcile the empirically more tightly connected long rates with the less tightly connected short rates, and the role that monetary policy plays in the economy and encompasses the stylised facts revealed in Kharroubi and Zampolli. Their evidence for the changing nature of the empirical relationships amongst rates, alongside the results in Shin (2013), suggests a steepening of yield curves for emerging market economies post-2010. It also raises the question of the desirable

degree of pass-through from short- to long-term rates for momentary policy effectiveness. Is there an optimal level of pass-through across the term structure, or is it simply necessary to be clear about what degree of pass-through exists at any point in time?

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