Notes on sections of Pavel's most recent draft
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2.1

~~Drop the CDS discussion, except to say that someone could use these data, but you take a different approach. Your first objection to CDS is also an objection to the synthetic construction you use – there is an OTC derivative contract involved. In practice the credit risk is tiny because the contracts are collateralized and frequently marked to market. Your second objection is fairly weak, and ISDA has mostly fixed that problem anyway. Your third objection also applies to your synthetic construction.~~

3. Methodology

3.1.

1. ~~The model should make clear at the beginning of 3.1 that it is a model of nominal yields and a nominal SDF.~~

2. ~~Logically, to proceed from Q to P measures, you should describe Q (as you do), then specify the functional form of the SDF (your 11), specify the functional form of the prices of risk (your 9), then say that a well-known implication of these choices is a VAR dynamics for the state under the P measure (your 10).~~

3. ~~The term "expected yield" on page 13 is confusing because the concept is not an expected yield. The reader thinks "expected yield" should be a forecast, as of t, of a yield at some future date. That is not your object. I think you need to refer to it as "expected average short rate" with notation something like, say,~~

~~E_t^P(\overline i_n) \ident E^P_t ((1/n) \sum_{j=0}^{n-1} i_{t+j}~~

4. ~~Forward rates should be denoted with "f", not "y". And as in my note (3) above, don't use the concept of "expected forward rate," since that is not the object you are constructing. Figure out some different terminology, and make it clear you are describing~~

~~E^P_t (1/(m-n) \sum_{j=n}^{m-1} i_{t+j}~~

3.2

1. ~~Identification.~~ This language needs to be cleaned up. ~~You use the terms "identification" and "bias", but these are not really relevant. "identification" will confuse people because we often use identification to refer whether there exists information in the observed data to determine the parameter(s) of interest. For example, with a cross-section of yields, we can identify Q parameters but not P parameters.~~ "Bias" refers to the difference between the true parameter and the expected value of the estimated parameter, a concept that cannot be distinguished from an estimation strategy (which you have not yet discussed). For example, ML estimation of a persistence parameter is biased. But ML, combined with Monte Carlo simulations, can produce an unbiased estimate of a persistence parameter.

   You are discussing a different concept, so use the correct words. ~~In a sample of 20 years or so, the sampling error in the mean of a persistent variable is high. Hence there is little information in the sample to determine population expectations. You use data that has more information about population expectations: surveys.~~

   ~~You discuss two common concerns: small samples and regime changes. That discussion is a problem for you. If we take seriously the possibility of a regime change, why do you use invariant models for P and Q? If a regime change does not change either P or Q, why do we care?~~

3.3 Survey data

1. ~~I think this section needs more explicit mathematics. There are too many moving parts for descriptions that use only words. Maybe something like this.~~

~~The estimated model implies that the expected average one-period nominal rate from 0 to 10 years is [expression] . I assume this equals expected average inflation over the same period, as reported by surveys, plus the expected global real rate over the same period, inferred by a combination of survey forecasts of future short-term U.S. Treasury bill yields and future U.S. inflation . The equation that links the model to these data is~~

~~[equation, with model-implied average short rate on the left and the equations that use the survey data on the right]~~

2. I have some questions about how you use this. First, how robust are the results to the use of U.S. data to identify the global real rate? One answer might be "we don't know because for no other country do we have forecasts of future inflation *and* future short rates." But if there is another country, such as the U.K. for which we have similar data, are the estimation results similar? Second, do you put measurement error into each survey (EM inflation, US inflation, US T-bill rates), or do you have a single measurement error for the equation that I'm describing in point (1) above?

3.4

1. I'm a little confused about the estimation procedure, since it has been a few years since I've done this myself. My vague recollection is that we don't formally use principal components. Instead, we assume that a specific pre-specified linear combination of observed bond yields is measured without error. This linear combination is given by the product of a (n times d matrix) * (d observed yields), producing n linear combinations of yields assumed to be measured without error. This matrix can come from anywhere. In practice, we use a matrix that corresponds to a principal components decomposition of yields over the same sample of data that we use in estimation. Another (d-n) linear combinations of yields are assumed to be measured with error. Is this what you are assuming about measurement error, or are you instead assuming all yields are observed with measurement error?

   With the approach that I am familiar with, we estimate VAR(1) dynamics of this linear combination of yields with OLS – which, again, for a specific choice of the transformation matrix, turns out to be OLS estimation of a VAR(1) on principal components. Is this what you are doing? If so, some more detail is useful. With the current version, the reader had no idea why you are introducing principal components into this estimation, since none of the math involves principal components.

2. Why do you not let the data tell you the standard deviation of measurement error for the survey data? In other words, make it a free parameter? I'm not saying you should, I'm saying you should have an answer to the question.

3.4.1

1. The language here needs to be fixed. You are not estimating the model at a daily frequency. You are estimating daily values of the pricing factors given the estimated model. I'd retitle this section "Estimating Daily Pricing Factors"

2. Again, it is not clear to the reader why you are mentioning principal components here. You have yields at t, and a mapping from yields to factors. You are inverting this mapping. That can be slightly tricky if all yields are observed with error, but the concept is straightforward and doesn't involve referring to principal components.

4, Decomposing Yields

4.1

1. ~~Again, I'm confused by the discussion of principal components. Given a covariance of yields, we can infer principal components. But why is this a valuable exercise? Do you use it anywhere? You state "Interestingly, the level factor plays a relatively bigger role…" Why is it interesting? If it *is* interesting, you need to explain why. Otherwise, why bother mentioning this?~~

2. ~~Don't make statements for which you have no evidence. "In general, emerging market yield curves are not as smooth as those of advanced countries, partly due to a shallower investor base." That's not in your math or your data, so how do you know it is due to a shallow investor base? In the context of the model~~, it simply means your model is not as good a cross-sectional fit for some emerging markets. Maybe there is a missing factor that picks up shallow markets, but perhaps inflation dynamics in those countries are not captured by VAR(1) dynamics. You do not know.

4.2

~~The big issue in section 4.2 that is unmentioned is: why should the reader be confident in your decompositions? Here's an example of what I mean. The variance of, say, the ten-year yield can be decomposed in to the sums of variances and covariances of the three individual components. There are six separate pieces to this decomposition. These six numbers for a population variance decomposition are a property of your estimated parameters and nothing else. Therefore these six numbers have standard errors because your estimated parameters have standard errors. What are the standard errors? In this version of the paper, you give the reader no reason to believe your decomposition, so the reader is not interested in what you do with the decomposition.~~

~~Delta-method standard errors are necessary here. This is a first-order issue for readers.~~

4.2.1.

1. I do not understand the reference to the two-year synthetic yield as a proxy for the expected future short rate. Why do correlations matter? In, say, a one-factor model, all yields at all horizons are perfectly correlated, but that doesn't mean any one yield is a good proxy for expected future short rates over a ten-year horizon.

2. I'm a little confused by Figure 7. Are the differences between the red and blue lines the realized values of measurement error (or perhaps "aggregated" measurement error) for inflation and US short rate expectations? ~~Put differently, if you imposed a much smaller SD of measurement error, would these lines be closer to each other? If that is the correct interpretation, then~~ it seems that some EM have much larger SD of measurement error than others, which I think you are not imposing.

3. ~~A similar observation for Figure 8. Put the US-implied average expected short-term real rate in these figures (the same line in each figure). If you set measurement error in survey forecasts close to zero, would these lines coincide?~~

4.2.2

1. Again, here you mention correlations as a way to assess measures of the term premium. Correlations tell us nothing about scale or level, so I don't see why this is an interesting metric.

2. I'm not persuaded by the regressions in Table 1 because I do not understand how you are calculating standard errors. I presume you are ignoring the errors-in-variables problem associated with the fact that the UCSV model is estimated. How do you handle the panel data setting? Are realizations at the same time across different markets correlated? How do you handle that? How do you handle correlations over time? There isn't any point to reporting regression results unless you explain why the reader should have confidence in the results.

4.2.3

The intuition behind the negative correlation between term premia and credit risk premia does not make sense to me. Remember that although you label both of these "premia," they are very different objects. A term premium is compensation for bearing the mean-zero uncertainty that interest rates might suddenly increase. A credit risk premium is two forms of compensation. One is compensation for expected losses owing to default, and the other is compensation for bearing the mean-zero uncertainty that defaults will be larger than expected. If a country flips a coin and decides to inflate away debt rather than default, the credit risk premium falls. However, term premia are not necessarily affected. In a homoscedastic world, they definitely are unaffected. Instead, expected future short rates increase in response to the news that the coin flip came up "inflate."

In a heteroskedastic world (outside of your model), compensation for mean-zero shocks generally move together. If, say, investors suddenly become more risk averse, term premia and the uncertainty-compensation component of the credit risk premium should both increase.

4.3

I don't understand much of this section because it lacks a clear question related to your paper. One question related to your paper is "are yields stripped of credit risk more closely connected to developed-market yields than are yields *not* stripped of credit risk?" Or you could ask "is the connectedness of common components of yields (expected future short rates, term premia) higher than the connectedness of yields themselves? Then the reader wants to know how to evaluate answers to these questions.

Also, I'm not familiar with the connectedness index, so I don't know what the numbers mean. Finally, your statement that "…which makes the argument of a global financial cycle stronger, not weaker" seems odd. If all yields moved in lockstep, connectedness would be 100%, and all yields everywhere are driven by a "global financial cycle." Anything less than 100% says something else is also going on.

5.Monetary Policy Spillovers

5.1

As with your section 4.3, this section is missing a clear connection to your decomposition. You need to start with a specific question, like "Papers XXX and YYY argue that EM yields covary with ZZZ because ZZZ changes term premia. Here I evaluate that claim using my decomposition." It isn't enough to do something that other people haven't done. You have to tell the reader why they should care about the answer.

You need to be clearer about the explanatory variables in regression (15). Based on the description, you seem to be using some variables that are changes (such as stock returns and changes in oil prices) to explain levels of yields. If true, that's an odd choice that needs to be defended.

5.2

What are the error bands on the figures? Plus/minus 2 standard errors?

Here, as in the last section, the reader wants to know if any of these results is surprising or otherwise helpful in research. For example, are there theories of EM yields that are incompatible with your results? You want the reader to put down the paper after reading it and say "I learned A, B, and C, and these are interesting because they help us distinguish among the following theories."