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Comment

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In its empirical section, this paper repeats Engel's (1999) decomposition of real exchange rates into the international relative price of tradable goods and international differences in the relative price of nontraded goods. The main addition is the use of value-added price deflators, rather than consumer price indexes, as in Engel (1999). Thanks to this, it is possible to perform the decomposition for a large cross-section of countries—although only results pertaining to several non-European pairs are effectively reported. The median country in this sample shares the features Engel documented 10 years ago: the bulk of the volatility in real exchange rates comes from volatility in the international price of traded goods. That said, there is considerable dispersion, with the volatility of traded goods prices explaining between 18% and 80% of real exchange rate volatility. In other words, Engel's fact holds for the median country, but the decomposition yields very different results depending on a country's characteristics, as in Betts and Kehoe (2001, 2006, 2008). It seems as if samples with high trade (or, possibly, stable nominal exchange rates) tend to imply different results from Engel's, a finding already evident in Mendoza (2000).

The paper then proposes to explain Engel's fact in a model in the international real business cycles tradition. Traded goods are imperfect substitutes across countries, and technological shocks affect both traded and nontraded sectors. Imperfect substitutability makes it possible for the international relative price of traded goods to vary over time in response to shocks. Labor is the only factor of production in all sectors, and it is perfectly mobile. An immediate consequence is that the relative price of traded goods maps directly into relative technologies. Whether the model can match Engel's fact becomes, then, directly isomorphic to whether the volatility of relative productivity in the traded sector is high enough in the data. The paper uses labor productivity in manufacturing and service sectors to answer negatively.

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Engel's exchange rate decomposition is a well-known puzzle, which was addressed in a voluminous literature. A common feature of this literature is a departure from the first-best case. For instance, Corsetti, Dedola, and Leduc (2008) eschew complete markets. Tradability is endogenous in Bergin and Glick (2007) or in Dornbusch, Fischer, and Samuelson (1977). Producers price to market in Engel (1999). Atkeson and Burstein (2008) have imperfect competition of a specific kind and time-varying markups. This list is far from exhaustive, as there is, in fact, a lot of theory seeking to explain Engel's fact. The strategy in this paper is to ask whether labor productivity shocks can account for Engel's fact in a frictionless model with perfect competition.

There are two crucial ingredients to what is attempted here. First, the calibration of technology shocks is central, since it will pin down one-for-one the behavior of all relative prices. Second, the more substitutable domestic and foreign goods, the harder it is for the model to generate any volatility in the international price of traded goods. Calibration is therefore of the essence.

Technology shocks in the traded and nontraded sectors are calibrated on the basis of measured labor productivity at the sectoral level, aggregated from manufacturing and service sectors, respectively. There is mounting evidence that a substantial share of variation in traded quantities appears to come from an extensive margin. This suggests the assumption that tradability is exogenous and given by an arbitrary split between manufactures, and services may not be innocuous. In particular, there is every chance that the observed volatility of the international prices in traded goods is affected by entry and exit decisions at the firm level. Thus, even with only technology shocks, a model that ignores the extensive margin may well underpredict the volatility in the international price of traded goods.

The elasticity of substitution between domestic and foreign goods is calibrated at values between 0.6 and 1.6, where 1.6 is labeled a "high elasticity" scenario. The range is obtained from a "variance ratio" criterion, corresponding to the ratio of the observed volatility in the price of aggregate imports, relative to the observed volatility of imported quantities. It is not clear why this variance ratio does not fall victim to the well-known criticism of traditional regressions of imported quantities on import prices. After all, if the price of imports is endogenous to observed imported quantities, so is its volatility. In fact, the variance ratio implies elasticity estimates similar to what is obtained in a venerable literature, namely, values around one. Still, it is difficult to think of an elasticity of substitution equal to 1.6 as a "high estimate." Some papers actually use values as high as eight for the parameter—see, for instance, Atkeson and Burstein (2008) or Corsetti et al. (2008). There is no doubt high values of the elasticity of substitution will substantially worsen the performance of the model—as a value of 1.6 actually does to some extent already.

While there are a lot of theories in the literature that seek to account for Engel's fact, few try and reproduce the dispersion of results in the data. According to table 1 in the paper, there are countries pairs where the relative price of traded goods accounts for up to 80% of the volatility in real exchange rates. What differentiates these country pairs from the median? Mendoza (2000) and Betts and Kehoe (2001) teach us that it may have to do with the intensity of bilateral trade and/or the exchange rate regime. The model presented here may actually inform this conjecture usefully, although this is unfortunately never pursued in the paper itself.

Consider a home supply shock to the traded sector. More traded goods are produced. Because of home bias, more production is directed to the home market, so that home consumption increases disproportionately. Because risk sharing is perfect, the home price of traded goods must fall, that is, the traded goods' real exchange rate rer_T rises. At the same time, a falling price of home traded goods means the nontraded goods' real exchange rate rer_N falls, by definition. In other words, the correlation between the traded and nontraded components of the real exchange rate is negative conditional on a traded goods' technology shock.

In contrast, consider a home supply shock to the nontraded sector. Again, because of a home bias, home consumption rises, and perfect risk sharing requires that the domestic price of traded goods falls. The traded goods' real exchange rate rises. But now both domestic prices fall: the nontraded goods' price falls in response to the shock, and the traded goods' price falls because of perfect risk sharing. Which effect dominates depends on the elasticity of substitution between traded and nontraded goods. In the paper, this elasticity takes low values, and the response of nontraded goods' prices dominates. As a result, the nontraded goods' real exchange rate rises. In other words, the correlation between the traded and nontraded components of the real exchange rate is positive, conditional on a nontraded goods' technology shock.

Put differently, the model can accommodate any values for the correlation between rer_T and rer_N, depending on the source of uncertainty (and the elasticities of substitution between domestic and foreign goods, and between traded and nontraded goods). As a corollary, the model should be able to accommodate any decomposition of the real exchange rate. In particular, in the model, high bilateral trade is presumably associated with large realizations of technology shocks in the traded sector. In other words, the model probably implies that trade partners should have negative correlations between rer_T and rer_N, ceteris paribus. This is interesting, for it goes in the direction of what is implied by the data. Unfortunately, this avenue is never pursued in the paper.

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