RESPONSES TO REVIEWER #3

Q1: The paper still contains many typos and is overall not well written.

A1: Thanks for your advice. We would correct the tying errors in the revision.

Q2: The interpretation that λ measures the effect of the various oil price shocks on short-term volatility is not meaningful. The term α + γ1{rt−1−u<0} simply represents the potentially asymmetric effect on short-term volatility of positive and negative "shocks" given by gi−1,tε2 i−1,t. However, these shocks have no structural interpretation and are unrelated to the structural shocks Xt that enter into the long-term component. Also note that the short-term volatility is driven by daily gi−1,tε2 i−1,t "shocks", while long-term volatility is due to monthly structural shocks. This observation questions all findings related to the effects of the various oil price shocks on short-term volatility provided in Section 4.

A2: We agree that λ does not measure the effect of the various oil price shocks on short-term volatility directly. However, λ can provide information of effect of the various oil price shocks on short-term volatility. Monthly structural shocks transmit their information into long-term volatility (τ_t). As specified in Equation 3, both $g_{i-1,t}$ and τ_t affect the short term volatilities.

Q3: The statement on P.5 that "the larger w1, w2, the faster the decay" is not correct. The Beta weighting scheme allows for hump-shaped weights.

A3: Thanks for this question. The Beta weighting scheme describe the weights of each lag l with fixed values of w_1 and w_2. The hump-shaped weights come from the function of $\varphi(l)$ rather than $\varphi(w_1, w_2)$.

Q4: The actual estimation of the structural shocks is not properly explained.

A4: Thanks for the question. The estimations of structural shocks are not robust when new sample points are added. It may be the reason to explain this question. In

the revision, we should fix this problem.

Q5: Instead of estimating a GARCH-MIDAS model for each typ of oil price shock separately, it would be more intuitive to estimate a single model including all types of shocks at the same time. This is would also greatly simplify the interpretation and comparison of the results regarding each typ of shock.

A5: Since we mark each shock as 0 or 1, a single model including all types of shocks at the same time may lead into the multi-co linearity among variables.