Abstract: The paper explores the implication of internal trade related costs. We extend the standard trade model with heterogenous firms to have a multiple port structure where exporting is subject to port specific local transportation costs and port specific fixed export costs as well as international bilateral trade costs. We derive a gravity equation with multiple ports and show that gravity distortion due to firm heterogeneity is conditional on port comparative advantage and resulting substitution of export across differentiated ports. Finally, we test the prediction of the model with Japanese custom data and detect a port substitution following the 2011 tsunami disaster.