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# Forecasting the Great Trade Collapse



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### ABSTRACT

This paper introduces a simple methodology to forecast international trade. The main innovation is to calculate non-unitary expenditure elasticities of import demand implied by non-homothetic preferences in the previous year to be further combined with the current change in expenditure to forecast the current imports. Using U.S. data on aggregate expenditure and good-level imports, we test the performance of the methodology in forecasting international imports. The methodology is successful in forecasting not only the Great Trade Collapse and the corresponding recovery period but also the other periods in the sample.

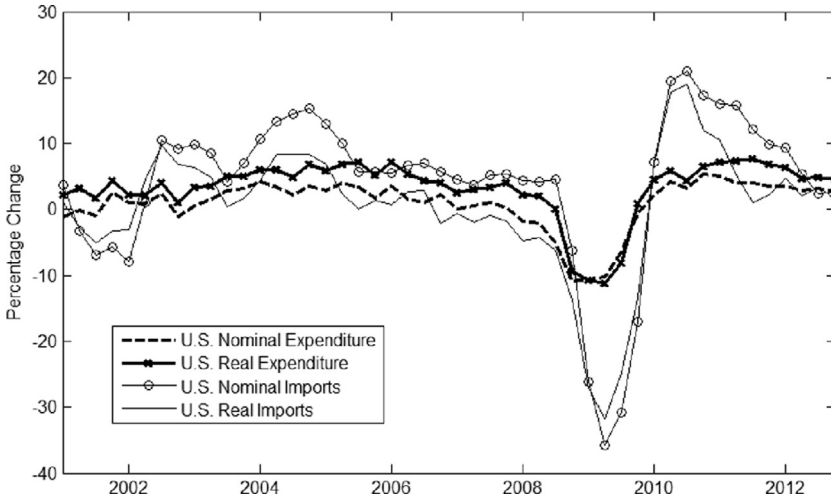
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## 1. Introduction

During the recent financial crisis of 2008–2009, the decline in international trade has been more than the decline in domestic expenditure/income, the so-called Great Trade Collapse. Fig. 1 shows the corresponding experience of the U.S. economy where the decline in U.S. imports is more than three times the decline in U.S. expenditure. This has been a surprise for the trade literature, since trade and expenditure/income are supposed to move together, mostly according to the unitary expenditure/income elasticity of demand implication based on constant elasticity of substitution (CES) preferences that are commonly used in the literature. This may cause a problem, especially while conducting policy, because the policy makers simply would like to know how trade responds to changes in overall economic activity. Accordingly, in order to explain the deviation of trade from expenditure/

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**Fig. 1.** Percentage change in U.S. expenditure versus U.S. imports. *Notes:* Percentage change in U.S. nominal (real) expenditure is measured by the annual percentage change in U.S. nominal (real) retail and food services sales. The percentage change in U.S. nominal (real) imports is measured by the median annual percentage change in value (quantity) traded across source countries and 4-digit SITC goods.

income, many studies have focused on alternative approaches to get rid of the unitary expenditure elasticity of demand by considering either multi-sector models with asymmetric spending changes across sectors or models with inventories. Within these studies, Alessandria et al. (2010a,b) have connected the trade collapse to the dynamics of inventories and compositional differences between traded goods and GDP, while Bems et al. (2010), Levchenko et al. (2011), Eaton et al. (2015), Bussiera et al. (2013), and Behrens et al. (2013) have explained the trade collapse through the composition of demand.<sup>1</sup> Based on these approaches, among others, the literature has (mostly) agreed that the collapse in aggregate expenditure, concentrated on trade-intensive durable goods, is the main driver of the trade collapse, although other factors such as inventory adjustment and trade credit have exacerbated the decline in trade.

Although the literature has successfully explained the Great Trade Collapse, it has missed an alternative and relatively easy approach to get rid of the unitary expenditure elasticity of demand; i.e., relaxing the assumption of CES preferences that imply homotheticity. Such an approach would not only connect the collapse in aggregate expenditure to the reduction in trade through endogenously determined non-unitary expenditure elasticity of demand but also allow us to forecast international trade in a simple way by combining the expenditure elasticity of demand with the changes in overall expenditure. This paper takes this approach by considering non-homothetic preferences.

Within the set of non-homothetic preferences, we consider a constant absolute risk aversion (CARA) utility function of which optimization results in an expenditure elasticity of import demand that can easily be calculated using data only on quantities and prices, without any estimation process. Accordingly, first, using data on U.S. imports (including information on both quantities and unit prices) covering the quarterly period over 2000q1–2012q4, we calculate expenditure elasticities of demand for U.S. imports at the good level. Second, for each period, calculated expenditure elasticities of the previous year (at the good level) are multiplied with the current annual percentage change in U.S. expenditure to obtain current (*ex post*) forecasted annual percentage change in U.S. imports (at the good level). Therefore, two pieces of information are enough for forecasting (the annual percentage change in international trade): the expenditure elasticity measures coming from the previous year and the annual percentage change in expenditure in the current period. We show that the

<sup>1</sup> Also see Bems et al. (2013), for an excellent survey of the existing literature.

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