

Seed Grant Application Cover Page

PRINCIPAL INVESTIGATOR:

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ADDITIONAL INVESTIGATORS:

Name:		Title:	
Department:		Email:	

Name:		Title:	
Department:		Email:	

Amount Requested:	\$11,790
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Proposal Title:	The Pricing-To-Market of US Firms
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PROPOSAL CHECKLIST:

- Abstract
- Narrative (2 single-spaced pages)
- Budget Page
- Biographical Data
- Publications/Exhibits/Performances (5 years)
- Proposals Submitted/Funded (5 years)
- Summary of Previous Seed Grant(s)
- Applicable animal/human requests for approval are attached

ELIGIBILITY:

- Early career faculty establishing scholarly program (5 years or less employment at UI)
- Established faculty transitioning into a new scholarly area

Has seed grant previously been awarded? Yes No

THE PRICING-TO-MARKET OF US FIRMS

Jing Sun, University of Idaho

Abstract

Unlike the conventional wisdom that dollar depreciation reduces US trade deficit, US trade balance is rather insensitive to exchange rate movement. Economists try to explain this by studying how firms make price adjustments in response to currency fluctuations, the so-called Pricing-To-Market (PTM) behavior. Existing research has found that US exporters do not change their profit margins in response to currency movements comparing to exporters from other countries (Knetter, 1989 and 1993). However, constrained by the availability of micro-data, much of existing research uses industry-level data and thus assumes that the marginal cost changes are the same for firms within an industry. The goal of this project is to relax this assumption by using firm-level data available through the Census Bureau. Understanding firms' PTM behavior would further shed light on how firms make strategic decisions such as the entry of export market, investment decisions and exchange rate risk management.

Methodologically, the project involves two steps. First, firm-level PTM elasticities are estimated by adding firm fixed effects to control for unobserved marginal cost changes, and thus more accurate estimates for PTM elasticities are obtained. Second, the estimated PTM elasticities are related to firm characteristics to reconcile aggregate and firm level findings.

THE PRICING-TO-MARKET OF US FIRMS

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1. Background and Contribution

The conventional wisdom on exchange rate movement and trade balance is a self-correcting one. For example, an appreciation of Chinese currency against US dollar will make the imports from China more expensive while making the US exports to China cheaper, automatically correcting US trade deficit with China. However, evidence shows that the US trade balance is rather insensitive to the depreciation of dollar. Economists try to explain this phenomenon from micro-foundations by studying how firms make price adjustments in response to exchange rate movement. The pricing-to-market (PTM) refers to the situation where for the same good, producers choose different profit margins across different destination markets. For instance, in response to dollar depreciation, German exporters could lower their profit margins on products exported to US market to offset the price changes induced by exchange rate fluctuation, resulting in the same dollar price after the exchange rate fluctuation. Such PTM behavior potentially plays an important role in explaining the relationship between nominal exchange rate fluctuations and the real economy. The goal of this project is to study the PTM behavior of US exporters using firm-level data available through the Census Bureau. This research fills the gap in knowledge about how firm heterogeneity determines PTM elasticities for US exporters¹.

Existing research uses industry-level export prices, assuming that marginal cost changes in a given industry are the same across firms in that industry. However, as discussed in Knetter (1989, 1993), the pricing-to-market behavior is dependent on the convexity of the demand schedule faced by a firm, which might be different from that faced by an industry. To achieve the project goal, the PI will use firm-level data by Census Bureau to relax this assumption and control for unobserved marginal cost changes by adding firm fixed effects and obtain more accurate estimates for the PTM behavior.

This project fits my current research interests in firm's role in globalization and extends my research line to link firm-level study to macroeconomic conditions. My dissertation studied how international market linkages (exporting, importing, and foreign direct investment) affected firm-level productivity in Indonesia. This proposed research will advance my understanding of how firms in an open and developed economy, like US, respond to changes in macroeconomic conditions and how the responses vary across different firms. This further contributes to the understanding of firm heterogeneity and its relationship to macro economy.

As a new faculty hired in August 2011, I do not have start-up fund. The seed grant will help me to advance my research agenda.

2. Methodology

Methodologically, the project involves two steps. First, following Knetter (1993), firm-level PTM elasticities are estimated across a wide range of products using firm level data on export prices. An improvement to Knetter (1993) is that the Census Data allows me to control for unobserved marginal cost changes by adding firm fixed effects and obtain more accurate estimates for the PTM behavior. PTM elasticities are obtained as follows:

¹ The recent paper by Harrigan et al (2011) uses the same dataset in 2002 and answers to question of the pricing behavior of US exporters without relating the pricing behavior to the exchange rate movement.

$$\Delta \ln(P_{kt}^{ij}) = \theta_t + \lambda_k + \varphi_{ij} + \beta_{kt}^{ij} \Delta \ln(E_{kt}) + \varepsilon_{it} \quad (1)$$

where P_{kt}^{ij} is the export price (measured in dollars) of good i produced by firm j at time t exported to k^{th} destination market, θ_t is the time effects, λ_k is the set of destination market fixed effects, and φ_{ij} is the firm-product-pair fixed effects capturing common movements in prices due to changes in marginal cost or common changes in profit margins. E_{kt} is the bilateral exchange rate defined as dollar per unit of the destination market currency (a decrease represents a depreciation in dollar). The coefficient on E_{kt} , β_{kt}^{ij} , is the PTM elasticity of good i produced by firm j at time t exported to k^{th} destination market.

In the second step, I will examine the relative impact of firm-specific characteristics on the degree of PTM. If PTM elasticities differ considerably across firms with different characteristics, this may have important aggregate consequences which could explain the relative insensitivity of U.S. export prices to exchange rates. This analysis hasn't been done in the previous studies due to the lack of detailed firm-level data and can only be performed with confidential Census data. The estimated equation is as follows:

$$\hat{\beta}^j = \lambda_0 + \left(\sum_{i=1}^6 \alpha_i X_i^j \right) + \varepsilon^j \quad (2)$$

where $\hat{\beta}^j$ is the PTM elasticities by firm j obtained from the first step (aggregated across products and across destination markets for each firm) and X_i^j is the firm characteristics including the ratio of domestic sales to total sales, the share of intrafirm trade in total trade, the share of homogenous good trade in total trade, firm size, and productivity.

3. Expected Outcomes and Deliverables

The project will first result in a discussion paper at the Center for Economic Studies (CES Discussion Paper) of US Census Bureau. Potential journal outlets for this research are the ones emphasizing empirical research on firms with international operations such as the *Review of Economics and Statistics* and the *Journal of International Economics*.

Additionally, as I gain familiarity with the confidential Census data after this project, my next step will be to develop some related study with the potential to apply for external grants from funding agencies such as NSF or Kaufman Foundation. For example, I could extend the research to incorporate different destination market characteristics or to incorporate a comparison with the export pricing behavior in US market by firms from other countries.

This project should be completed within a year for the following reasons. First, I have planned the scope of the project and its tasks to fit within one year. I plan to clean up the data by myself in the summer² and will hire a local undergraduate as research assistant to do regression analysis in the fall while I am working on literature review. In the spring semester, I will have analyzed and interpreted the data and be able to begin manuscript preparation. Second, I submitted my proposal for data access to the Census Bureau in early January, and my preliminary proposal has been approved. I have been in touch with staff at the Census Research Data Center in Minnesota, and the data access proposal should be approved by June, 2012. Third, I am a very proficient programmer and I have window open for this research in the second half of 2012.

The seed grant will help to fund an undergraduate student on data analysis and a seat fee charged at Census Bureau Research Data Center (RDC), and to fund my trips to RDC. The details are given in the budget.

² Census Bureau firm-level data are confidential data and can only be analyzed on-site.

References

Harrigan, James, Xiangjun Ma, and Victor Shlychkov, (2011), "Export Prices of US Firms", CES Discussion paper 11-42, December.

Knetter, Michael, (1989), "Price Discrimination by US and German Exporters", *American Economic Review*, 79 (1): 198-210.

_____, (1993), "International Comparisons of Pricing-to-Market Behavior", *American Economic Review*, 83 (3): 473-486.