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Anti-dumping Duties and their Impact on Exporters: Firm Level Evidence from China

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Summary. — Despite a dramatic rise in the instances of anti-dumping (AD) duties, their impact on the targeted firms is not clear. Using detailed firm level data we find robust evidence that the US AD duty led to over 12 (or five) percent decrease in labor productivity (or TFP) of targeted Chinese firms. We also find that firms with high initial export intensity experience both a higher decrease in exports (and total sales) and a bigger drop in productivity due to the US AD duties. Our results suggest reduced economies of scale as a possible mechanism for the drop in firm productivity.

Key words — antidumping duties, trade restrictions, productivity, heterogeneous firms, Asia, China

1. INTRODUCTION

Anti-dumping duties (AD) are duties levied on imported products considered to be sold at "less than fair value." These duties are imposed "in order to offset" the potential injury to the domestic industry. Although some countries have used AD for more than a century, there has been a dramatic growth in AD investigations in recent years both in terms of the number of countries as well as the number of products involved (Blonigen & Prusa, 2008; Prusa, 2001).

Despite the proliferation in anti-dumping duties in recent years and the consequent voluminous literature searching for causes and effects of AD use, there are very few empirical studies that look at the impact of AD duties from the perspective of foreign targeted firms (see Bown, 2010a; Lu, Tao, & Zhang, 2012). In this paper, we attempt to fill this gap in the literature by exploring the influence of AD duties on Chinese firms that were hit with an US AD order.

In the flurry of AD investigations initiated and duties imposed in recent years, China has become one of the most frequently targeted countries, while the United States ranks number two in both the number of investigations and the number of AD duties imposed.[1] The study of how US AD duties affect Chinese exporters is thus not only of importance to policy makers in China and the United States, but it also provides a good opportunity for scholars to explore the impact of anti-dumping duties in the context of the world's two largest economies and trading countries.

To preview our results, we find that the US AD duties led to a significant drop in both labor productivity and total factor productivity (TFP) of Chinese firms. Our results are statistically and economically significant, with estimates implying that US AD duties decrease the labor productivity of targeted Chinese firms by over 12%. The decrease is up to 5% if one uses TFP measured by the Olley–Pakes method. These estimates are robust to a large set of robustness checks. In addition, we find that firms with high export intensity experience lower export volumes in response to the AD duties. As a result, firms with high export intensity experience a decline in total sales and a greater drop in productivity. The source for the productivity decline due to AD duties thus seems to stem from the reduced benefit from economy of scale when access to the export market is restricted.

To address the potential issue of endogeneity, where firms targeted by AD duties are different in productivity to begin with, we compare three sets of treatment *versus* control groups. In the first comparison, we study how firms that are specifically named in the AD duty orders differ from those that were investigated for antidumping but did not face any AD duty. To construct the sample of firms that are specifically named in the antidumping investigations, we manually collect the information from various issues of the *Federal Register*. Next, we compare all exporting firms from industries on which AD duties are imposed with exporters from industries that were investigated for anti-dumping but ended up not getting AD duties. Finally, as a third comparison, we adopt the Konings and Vandenbussche (2008) approach to construct an alternative control group for the exporters from industries

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faced with AD duties, i.e., firms from those industries that have a high enough probability of getting AD duties based on the first-stage estimation. Estimations based on each of these three sets of samples provide similar results, showing significant negative effects of AD duties on firm productivity, measured by labor productivity or TFP.

Another major finding of our study is that the antidumping duties can have different effects on firms within the same industry. First of all, although the imposition of the antidumping duty has small or negligible effects on the labor productivity and TFP of an average firm in the industry, the productivity of the firms that have been specifically named in the AD duty order decreases by substantially more (up to 12% for labor productivity and 5% for TFP). In addition, firm heterogeneity in export intensity influences the AD duty effects. Compared with new exporters, firms with higher initial export intensity are found to experience larger negative effects on productivity, exports, and total sales due to the imposition of AD duties. Finally, firm ownership also influences the effects of AD duties. While foreign invested firms suffer greater loss in productivity, state owned firms tend to experience less negative effects. These differences are due to the firm-specific nature of the antidumping duties. Studies that treat all firms within a given industry similarly would thus grossly underestimate the adverse impacts of AD duty.

Our study contributes to two related areas of economic research. The first is the research on anti-dumping, where most studies look at the impact of AD protection on the import competing firms (see, for instance, Konings & Vandenbussche, 2005, 2008; Pierce, 2011). A few papers look at the impact of AD duties on foreign countries, but they study the impact of AD at the product or the industry level (for instance, Blonigen & Feenstra, 1997; Bown & Crowley, 2006, 2007).[2] By identifying and exploring the effect of AD on Chinese firms affected by the US AD duty, we attempt to fill in the gap in firm level studies exploring the AD effects on targeted exporting firms.

To the best of our knowledge, the only other empirical papers that look at the impact of AD duty on the target country at a disaggregated level are Brambilla, Porto, and Tarozzi (2012) and Lu *et al*. (2012). Our paper differs from these studies as follows: Compared to Brambilla *et al*. (2012), which looks at a specific sector—Vietnamese catfish industry—to explore the impact of a particular US AD imposed in 2003, the current paper looks at all Chinese industries that were targeted by the US AD duties during 2000–2006. In addition, they study the impact of AD duty on household income for individuals, whereas we are interested in the impact of AD duty on targeted foreign firms' performance.

In contrast to Lu *et al*. (2012), which uses transaction level Chinese customs data, we utilize firm level data from the Chinese manufacturing surveys to study firm productivity in addition to export performance. Furthermore, we collected our own data on firms that were investigated but did not face any AD duties from various issues of the *Federal Register*. Thus we can use firms investigated for anti-dumping as one of the control groups, which is arguably the closest to the treatment group (Konings & Vandenbussche, 2008).[3] We will further discuss the complementarities between their findings and ours in the results section.

The current study also relates to the general literature linking trade with productivity. One strand of literature documents the gains in aggregate productivity due to trade liberalization as the least efficient firms drop out of the market (Hillman, 1982; Melitz, 2003). Another strand focuses on firm level investigations of how firm productivity responds to trade. Trefler (2004) shows that a decrease in US trade barriers associated with CUSFTA led to a dramatic increase in labor productivity for Canadian firms. Mechanisms proposed to explain the positive trade-productivity link include returns to scale (Cox & Harris, 1985; Van Biesebroeck, 2005), self-selection of more productive firms into exporting (Bernard & Jensen, 1999; Clerides, Lach, & Tybout, 1998), and "learning-by-exporting", through which exporting behavior itself might lead to an increase in productivity (De Loecker, 2007; Park *et al*., 2010).

In contrast to earlier work that studies how an increase in market access affects the productivity of exporting firms, we explore the issue from a new angle: What happens when the access to foreign market is reduced due to the imposition of AD duty? In addition to finding a negative impact on firm productivity, we also discover negative effects on firm export volume and sales, suggesting that trade restrictions can influence productivity through reducing exporters' benefit from economies of scale.

The rest of the paper is structured as follows. Section 2(a) provides some background information on the US AD process, which motivates our empirical strategy in Section 2(b). Section 3 describes the data, followed by empirical results in Section 4. Section 5 concludes.

2. INSTITUTIONAL BACKGROUND AND EMPIRICAL STRATEGY

(a) *Institutional background*

In recent years there has been a dramatic rise in the use of AD duties, with China being particularly targeted. Given the large number of AD cases it has been involved in, China is a good case to focus on when exploring the effects of AD duties. The specific goal in this paper is to study the impact of AD duties on firms that were targeted by the duties, and a straightforward approach is to conduct the following estimation:

$$y_{ijt} = \alpha + \beta_1 AD_{ijt} + \beta_2 X_{ijt} + \varepsilon_{ijt} \tag{1}$$

where y_{ijt} is the firm performance measure for firm j in industry i in year t, $ADijt$ is the anti-dumping duty measure for firm j in that given year, and $Xijt$ is a set of firm characteristics. Hence, our coefficient of interest is $\beta 1$.

The concern of sample selection, however, cautions against a simple application of the above method. Specifically, firms that are investigated for antidumping or imposed AD duties may be different from the other exporters. For example, the firms involved in AD investigations may have higher or lower productivity as compared to the other firms.

To address this issue, we will choose as our treatment and control groups the samples of firms that are most comparable in the observables. We now turn to the underlying institutional framework related to anti-dumping duties in the United States to better understand the concern of sample selection and to choose the proper treatment and control groups. Later in the data section, we will present empirical evidence that our treatment and control groups of firms do look similar in the observable characteristics.

In the United States, there are two separate agencies that handle anti-dumping investigations: the International Trade Administration (ITA) of the US Department of Commerce (DOC) and the International Trade Commission (ITC). The DOC determines whether the alleged dumping exists and then determines the final dumping margin, whereas the ITC determines whether the alleged dumping has threatened or caused