



Financial reforms, product differentiation, and trade



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HIGHLIGHTS

- Differentiated product exports is associated with larger share in world trade.
- We show impacts of financial reforms on exports of differentiated products.
- Reforms of greater intensity increase exports of differentiated products more.
- Reforms also differ in terms of time taken to affect exports.

ARTICLE INFO

Article history:

Received 14 August 2013

Received in revised form

9 January 2014

Accepted 12 January 2014

Available online 21 January 2014

JEL classification:

F10

F14

Keywords:

Product differentiation

Exporter–time fixed effects

Exporter–industry fixed effects

Exports

ABSTRACT

We hypothesize that exports of differentiated products, which entail greater upfront costs, increase more as financial reforms take place. We find strong and robust empirical support of this hypothesis with a comprehensive set of measures of reforms encompassing the banking sector, interest rates, equity and international capital markets.

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1. Introduction

A distinguishing feature of the process of industrialization in the last century has been a rapid increase in exports in countries such as Korea and Taiwan (Artopoulos et al., 2011). Another stylized fact is a near-monotonic increase in world trade over the last few decades that is rooted in a similar increase in the trade of differentiated products (Fig. 1). Exporting differentiated products, however, involves higher upfront fixed costs related to the identification and development of market opportunities; with many varieties, differentiated products often do not have established prices (Rauch, 1999). A specific example of greater costs in exporting differentiated products is explained in Fink et al. (2005) who find greater effect of communication costs on exports of such products.

In general, search costs, product design costs and other marketing and distribution costs being higher compared to homogeneous products, credit is comparatively more important for exports of differentiated products (Becker et al., 2013). Indeed, the state of financial development – measured by accounting standards and by the ratio of bank credit to GDP – is positively associated with exports of differentiated products (Becker et al., 2013). Financial reforms by relieving credit constraints are, therefore, expected to have differential impacts on exports by product type.

Using the Rauch (1999) classification we test the hypothesis that improved credit availability leads to relatively greater increase in exports of differentiated products.² We exploit shocks to availability of finance due to reforms in 88 countries for the period

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² Rauch (1999) defined homogeneous goods as products whose prices are set on organized exchanges. Goods that are not traded on organized exchanges, but possess a benchmark price, were defined as reference priced. Products whose prices are not set on organized exchanges and/or lack a reference price were

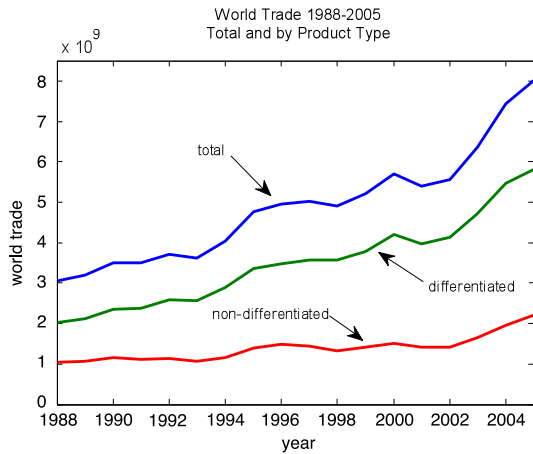


Fig. 1. World trade.

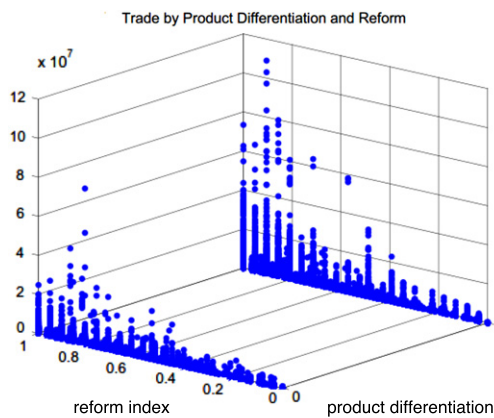


Fig. 2. Industry-level trade by financial reform and product differentiation. Notes: (a) In both figures trade values are in '000 2005 US GDP, (b) In Fig. 2, trade values are those in SITC 4 classification industries, (c) In Fig. 2, conservative Rauch product differentiation classification is used. Exports are on the vertical axis, z. The financial reform index is on x axis while the product differentiation is on y axis. Since the product differentiation variable is a binary indicator variable, all observations appear either at $y = 0$ (non-differentiated) or at $y = 1$ (differentiated). When $y = 0$, moving along the x axis from 0 to 1 – i.e., higher levels of reforms – exports increase. Similarly, at $y = 1$ moving along the x axis from 0 to 1, again, exports increase. Comparing the scatter points at $y = 0$ with those at $y = 1$, exports increase more for differentiated products as the level of reforms increases.

1988–2005 based on the recently developed financial reforms data by Abiad et al. (2010). Combining this data with industry level trade flows, the 3-dimensional plot in Fig. 2 provides the illustrative support for our main hypothesis: the mean levels of exports of differentiated products are higher under reformed financial markets. Empirical results based on a fixed effects model and an event study approach provide strong evidence in support of our hypothesis.

2. Data on financial reform measures and exports of differentiated products

Abiad et al. (2010) provide a measure of liberalization for each of the seven different aspects of financial reforms: directed credit, interest rate controls, entry barriers, banking supervision, privatization, international capital, and equity markets. Each measure comprises four categories indicating different intensity of

Table 1
Descriptive statistics of the key variables.

	Mean	s.d.
Log trade (in '000 2005 US GDP)	7.43	3.81
Reform index	0.71	0.22
Product differentiation dummy	0.62	0.49

Notes: (a) $N = 753, 166$. (b) Year range is [1988, 2005]. (c) Only non-zero SITC-4 digit industry log trades are in the sample with the maximum value of 18.5. (d) The reform index is a continuous variable with range [0, 1]. (e) Product differentiation dummy: 0 = homogeneous, 1 = differentiated (Rauch classification, conservative).

reforms: fully repressed = 0, partially repressed = 1, partially liberalized = 2, and fully liberalized = 3. Overall financial reform is obtained by summing over seven individual scores (each coded as 0, 1, 2 or 3) and dividing it by 21, hence normalizing it to a [0, 1] interval.

The industry level trade data comes from Comtrade provided by the United Nations Conference on Trade and Development (UNCTAD). The total number of exporters in the sample is 88. Based on Standard Industrial Trade Classification (SITC 4) data in Comtrade, about 62% of the trade between 1988 and 2005 were in differentiated products (Table 1).

We convert each reform measure into 4 binary indicator variables: for each measure we identify if a country is “fully repressed or not”, “partially repressed or not”, “largely liberalized or not”, and “fully liberalized or not”. The sample is summarized in Table 2 by each aspect of reform and in terms of its different intensity categories.

3. Empirical framework and results

3.1. Fixed effect regressions

We estimate the following equation to estimate the diverse impact of financial reforms on exports of differentiated products:

$$\ln(X_{jt}^s) = \alpha_k + \sum_{m=1}^3 \beta_k^m (R_{jkt}^m * PD_s) + \theta_j * t + \theta_s * s + \xi_{jt}^s, \quad (1)$$

where, X_{jt}^s is country j 's exports in industry s at time t , R_{jkt}^m dummy denotes the k -th reform of intensity m in country j at t (for example, partially repressed equity markets at time t in country j), PD_s dummy equals 1 if sector s is differentiated and equals 0 when it is non-differentiated/homogeneous. The error term is denoted by ξ . The omitted category for each reform is the state of full repression.

The specification in Eq. (1) incorporates two kinds of fixed effects: (a) *exporter–time fixed effect*, i.e., a separate fixed effect for every exporter in each time period ($\theta_j * t$), and (b) *exporter–industry fixed effect*, i.e., a separate fixed effect for each industry in each exporting country ($\theta_s * s$). In a regression for a specific aspect of reform (e.g., directed credit), the exporter–time fixed effects account for not only all the country specific factors (observed factors such as GDP and unobservable factors such as institutional quality) but also the states of other reforms in the country. Additionally, they account for other channels affecting trade in differentiated products that have been identified in the literature (e.g., country specific diaspora, ethnic networks, etc.). With the exporter–industry fixed effects, country–industry attributes such as reputation (for example, automobiles from Germany) are accounted for. The specification in Eq. (1), therefore, limits the possibility of omitted variable biases on several fronts.

In each of the seven regressions, our coefficients of interest are the β_k^m 's. We expect $\beta_k^m > 0 \forall k, m$, i.e., reforms with varying intensities to increase exports of differentiated products relative to homogeneous products. Finally, we expect greater effects from higher intensity of reforms unless diminishing returns from reforms become a factor.

labeled as differentiated. Rauch assigns each SITC industry to one of three categories: differentiated products (e.g., apparel), goods with reference prices (e.g., polymerization products) and exchange-traded goods (e.g., lead).

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