ARTICLE IN PRESS

Journal of Monetary Economics ∎ (∎∎∎∎) ∎∎∎–∎∎∎

Contents lists available at ScienceDirect

Journal of Monetary Economics

journal homepage: www.elsevier.com/locate/jme

The growth of multinational firms in the Great Recession

Vanessa Alviarez[a], Javier Cravino[b,c], Andrei A. Levchenko[b,c,d,*]

[a] UBC Sauder, Canada
[b] University of Michigan, 611 Tappan Street, Ann Arbor, MI 48109, United States
[c] NBER, United States
[d] CEPR, United Kingdom

ARTICLE INFO

Article history:
Received 28 October 2016
Accepted 2 November 2016

JEL classification:
F23
F44

Keywords:
Great Recession
Multinational firms

ABSTRACT

Using a large firm-level dataset, this paper studies multinational firms' performance during the Great Recession. Foreign multinationals grew faster than local firms outside of the crisis, but slower during the crisis. Industry and size differences between domestic and foreign-owned firms account for much of this slowdown. However, multinationals from different countries performed differently during the crisis. The paper then assesses the role of multinationals in the global recession using a quantitative model. Had multinationals' relative performance remained unchanged during the crisis, the median country's aggregate growth would have been 0.12% higher, with a range of −0.13 to 0.5% across countries.

1. Introduction

Between 1980 and 2007, the global economy witnessed an unprecedented period of economic integration. While international trade in goods and services grew from 20% to 30% of world GDP, the growth of foreign direct investment was even more spectacular, with sales of foreign multinational affiliates growing from less than 20% of world GDP in the 1980s to nearly 50% today. This pace of economic integration appears to have halted during the recent Great Recession. While a large literature has focused on the collapse in trade and its role in the cross-border transmission of the crisis, little is known about the behavior of foreign multinational firms during this period. This paper uses novel firm-level data for a broad set of countries to shed light on two questions. First, was the growth of foreign multinationals relative to domestic firms affected by the Great Recession? Second, how did foreign multinationals contribute to the recession?

The paper first documents that during the Great Recession there was a "Multinationals Sales Collapse" that was similar in magnitude to the much-studied "Trade Collapse." In particular, manufacturing sales of foreign multinational affiliates fell by nearly as much as imports of goods in many OECD countries between 2008 and 2009, according to the aggregate OECD statistics. The main analysis then uses a large firm-level database covering 8 million firms in 34 countries over the 2004–2014 period to better understand this aggregate phenomenon. The firm-level data also show a slowdown in foreign affiliates' sales relative to domestic firms' sales during the recession. While the combined sales of foreign affiliates grew faster than domestic firms before the crisis (2004–2008), they shrunk relative to domestic firms during the crisis (2008–2009). This pattern is pervasive across the developed and developing countries in our data, and across destination

* Corresponding author at: University of Michigan, 611 Tappan Street, Ann Arbor, MI 48109, United States.
E-mail address: alev@umich.edu (A.A. Levchenko).

http://dx.doi.org/10.1016/j.jmoneco.2016.11.006
0304-3932/

Please cite this article as: Alviarez, V., et al., The growth of multinational firms in the Great Recession. Journal of Monetary Economics (2016), http://dx.doi.org/10.1016/j.jmoneco.2016.11.006

countries with different multinational presence. Foreign affiliates' growth was on average about 2 percentage points higher than the growth of domestic firms outside of the crisis, but 1 percentage point *lower* during the crisis.

We provide an account of the collapse in multinational firms' sales by focusing on the role of observable differences between foreign affiliates and domestically owned firms. In particular, the firm-level nature of the data can be used to show that the fall in multinational sales is largely explained by the sectoral composition and by differences in size across firms. Controlling for sectoral composition differences between foreign and domestic firms (by means of destination–industry–year fixed effects) reduces the crisis growth differential between foreign and domestic firms from -1 to zero percentage points. Further controlling for firm size implies that foreign affiliates actually grew faster during the crisis than domestic firms of comparable size, erasing any difference in relative performance of multinationals in the crisis compared to the pre-crisis period. Finally, the same results obtain using a propensity score matching (PSM) estimator that matches each foreign multinational affiliate with a control group of domestically owned firms within each sector and country based on observable firm characteristics such as size, age, and multi-product status. Thus, the pronounced difference in performance between multinationals and domestic firms during the crisis is accounted for by observable differences between foreign affiliates and domestic firms. On the other hand, multinational firms are far from being a homogeneous group: the impact of the crisis varied substantially across foreign affiliates from different source countries. For instance, according to the PSM estimates French foreign affiliates actually grew 1 percentage point faster than domestic firms during the crisis compared to the pre-crisis years, whereas the Swedish foreign affiliates grew 2.3 percentage points slower.

A natural implication of the heterogeneity in multinational firms' performance is that their impact on aggregate growth should be different across destination countries that host different multinationals. The final step of the analysis evaluates this implication in a quantitative multi-country model of multinational production calibrated to match observed bilateral multinational production shares. The empirical estimates of the differential growth by multinational firms can be interpreted through the lens of the model, which allows us to recover the shocks affecting multinationals from different source countries. We use these estimated shocks to conduct a counterfactual exercise that asks: how much would aggregate output change in the Great Recession had multinationals' relative performance remained the same as in normal times?

Our results show that output growth would have been 0.12 percentage points higher in the median country had multinationals' relative performance not been affected by the crisis. Among the 10 countries with the largest multinational presence (about the top third of our country sample), the counterfactual growth rate is 0.18 percentage points higher. Differences in the overall multinational presence and the fact that different countries host multinationals from different sources induce substantial differences in counterfactual growth rates across destination countries. The differences between counterfactual vs. actual growth rates in the full sample range from -0.13 to 0.5 percentage points. Relative to the overall output declines observed in these countries over 2008–2009, the incremental contribution of the shock to multinationals was thus modest.

This paper contributes to the literature on the international dimension of the Great Recession, and in particular its effect on cross-border linkages. A number of papers analyze the determinants of cross-country differences in the severity of the Great Recession, including openness to trade and capital flows (Blanchard et al., 2010; Lane and Milesi-Ferretti, 2011; Berkmen et al., 2012). An extensive literature, surveyed by Bems et al. (2013), studies the Great Trade Collapse, and the transmission of country shocks through trade linkages (see, e.g., Bems et al., 2010; Levchenko et al., 2010). To our knowledge this is the first study that uses firm-level data spanning the crisis and its aftermath to study the performance of multinational firms during this period. Alfaro and Chen (2012) use a dataset similar to ours to argue that affiliates of foreign

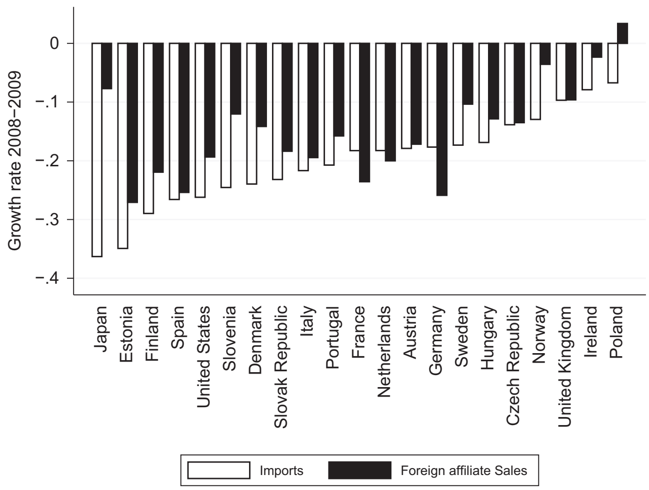

Fig. 1. Collapse in imports and foreign affiliate sales, 2008–2009. *Notes*: This figure reports the growth rates of goods imports and of foreign affiliate sales between 2008 and 2009. *Source*: Authors' calculations based on OECD Statistics database. We use goods imports, and inward turnover by the foreign affiliates of multinational firms in the manufacturing sector in domestic currency.