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The transitional impacts of material and service offshoring

Perry Burnett [a,*], Harvey Cutler [b]

[a] Department of Economics and Marketing, University of Southern Indiana, Evansville, IN 47712, United States
[b] Department of Economics, Colorado State University, Fort Collins, CO 80523, United States

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Abstract

The recent expansion of offshoring intermediate services has given rise to public fears and a possible pullback from a liberal trading system. Modeling and estimating intermediate offshoring is complicated since the shock is further down the production process. This paper incorporates the necessary transmission mechanisms into a data-intensive CGE model for the State of Colorado to estimate the current and future impacts of continuing a liberal trade policy for offshoring intermediates. The results indicate that while the overall effects of offshoring are small and positive, the future directions of service offshoring are projected to cause sizable domestic job destruction and displacement. Policies may have to be implemented to retrain domestic workers who face job loss or even consider curtailing future offshoring opportunities.

JEL classifications: F16; J31; F66; L80

Keywords: Service offshoring; Material offshoring; Wage inequality; Job destruction; Offshoring transition

1. Introduction

The Alvin Hansen Symposium on Public Policy at Harvard University in 2009 hosted a vigorous debate on the potential role of offshoring as it becomes a larger factor in the U.S. economy. An aspect of this debate can be viewed from the perspective of job destruction and transition.

* Corresponding author at: 8600 University Blvd, Evansville, IN 47712, United States.
E-mail addresses: paburnett@usi.edu (P. Burnett), Harvey.cutler@colostate.edu (H. Cutler).

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Bhagwati (1997, p. 22) noted that "the changed external environment of a kaleidoscopic comparative advantage" leads to decreased job security and higher job displacements. Bhagwati and Blinder (2009) states that the job churning could lead to substantial structural unemployment due to occupational/skill mismatch as well as deficient demand during the transition years. The recent increase in service offshoring has also given rise to public fears and a push to move away from a liberal trading policy (Amiti and Wei, 2005; Salvatore, 2009). This paper models the continuance of a liberal trade policy for intermediate offshoring using a computable general equilibrium (CGE) model.

While modeling the offshoring of final goods is relatively straightforward, intermediate input offshoring is more complicated since the shock is further down the production process. Egger and Egger (2005) argue that two key transmission mechanisms are needed: input–output linkages so that the effects can be traced throughout the economy and a labor absorption mechanism where displaced labor find employment in other sectors. Grossman and Rossi-Hansberg (2008) model the offshoring of tasks by arguing for three mechanisms: the relative price effect, which captures the fall in the relative price of the good; a labor supply effect, which is similar to Egger and Egger's (2005) labor absorption; and a productivity effect, which comes from further domestic specialization.

Our paper incorporates theses transmission mechanisms into a data-intensive CGE model for the State of Colorado to model and estimate current and future impacts of using a liberal trade policy for the offshoring of intermediate material manufacturing and services. Colorado was used as a test case since it is the 49th largest economy in the world and is one of a few states in the country that have detailed data on specific sector capital stock values. These data are used to derive sector-specific labor-capital ratios that play important roles in understanding the economic impacts of offshoring.

Our results reveal key differences in how intermediate material and service offshoring generate economic activity though their aggregate results are similar. For material offshoring, both the fall in relative prices and the resulting productivity gains contribute relatively equally to overall employment gains. Material offshoring also benefits by small losses through labor displacement due to its low labor-capital ratio. Service offshoring (both low-skill and high-skill), however, generates its economic activity primarily though the fall in relative prices (though productivity gains also contribute), and it is the size of this relative price effect that allows service offshoring to offset its large labor displacement effects that arise due to high labor-capital ratios.

To understand the impact of the labor displacement effect for service offshoring, a net job creation-destruction ratio (NJCDR) is created which compares the number of new net jobs created in the economy divided by the number of own-sector jobs permanently destroyed. For example, a NJCDR of zero means that the number of jobs created by offshoring throughout the economy is equally offset by the amount of jobs it destroyed in the offshoring sector leading to no net gain in aggregate employment. A NJCDR of 5 implies that the creation of new net jobs is five times the size of the absolute value of the permanent domestic job loss in the offshoring sector. This ratio plays an important role in understanding the different types of service offshoring as the relative size of the NJCDR signals important sectoral labor disruptions relevant for policymakers.

Section 2 presents a short history of offshoring and reviews the literature. Section 3 describes the value of a CGE model in this analysis. Section 4 presents how the simulations are implemented and discusses the results of the analysis. Section 6 is the conclusion and policy considerations.

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