Trade and Employment in India during global Crisis

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Abstract:
The paper estimates the effects of trade contraction in the global crisis on employment in India, using social accounting matrices (SAMs) in a Leontief multiplier model in which the change in demand is represented by the change in exports from India to the EU and US. This modeling approach provides a *ceterus paribus* result, for which the effects of trade contraction are to a large extent isolated from other simultaneous events, both potentially negative (e.g., foreign investment) and positive (e.g., Government crisis responses). This can facilitate a clearer sense of the relative importance of the various transmission channels of the global crisis, with estimated employment changes resulting from trade contraction providing a useful point of comparison with actual employment changes during the crisis. This paper also evaluates employment impacts at aggregate and industry levels. These results are discussed with reference to trade policy and patterns in India as well as actual changes in employment during the crisis, along with aspects of Government crisis responses.
Keywords: social accounting matrices, employment

1. Introduction

Even as the global crisis of 2008-09 was ravaging financial institutions in the U.S. and Europe, high-level Government officials in India expressed confidence that the country could escape relatively unscathed. The confidence was not unfounded, based as it was on the financial institutions being well regulated and supervised and also based on an appreciation of the channels through which the effects of other recent financial crises had been transmitted across borders. Indeed the effects of the global crisis would have undoubtedly been much worse in India had the financial institutions not been as well run. But the global crisis of 2008-09 was unprecedented in the role that trade played as a transmission channel. The great trade collapse is not as large as that of the Great Depression, but it is much steeper. Imports and exports collapsed for the EU27 and 10 other nations that together account for three-quarters of world trade; each of these trade flows dropped by more than 20 percent from 2008Q_2 to 2009Q_2; many fell 30 percent or more. World trade in almost every product category was positive in 2008Q_2, almost all were negative in 2008Q_4 and in 2009Q_1. That global trade would have fallen alongside global output is unremarkable. Yet real global output is estimated to have declined by 2.2 percent in 2009 and real global trade by 12.2 percent.

2. Trade policy and patterns:

India is noteworthy for its rapid pace of trade liberalization and because it figure importantly in debates on the role of trade liberalization in economic development. Regarding India, Kumar and Mishra write that “the 1991 trade reform represented one of the most dramatic trade liberalizations ever attempted in a developing country”. Trade liberalization in India began in the mid-1980s and accelerated after the balance-of-payments crisis of 1990-91.

In response to the crisis, the Indian Government requested stand-by assistance from the International Monetary Fund (IMF) and a structural adjustment loan from the World Bank. IMF and World Bank support was made conditional on a wide range of economic reforms, including trade liberalization as embodied in the Government's Export-Import Policy of 1992-97. Between 1990 and 2000, the share of imports subject to non-tariff barriers declined from 82 to 17 percent and average tariffs for manufactured goods declined from 117 to 39 percent. By 2005, average tariffs in India had declined to 19 percent for all goods, 38 for agricultural goods, and 16 percent for non-agricultural goods. Because of the limited availability of recent export data at a detailed industry level for India, the study is based on mirror data on imports from the two countries the EU and US. Yet these are important markets for Indian exports and so provide a useful account of the effects of the crisis through trade contraction. The Rand appreciated strongly against the Euro and US Dollar during the crisis, and exchange rate policy was debated in the country. For India, there was a substantial decline in exports from early 2008 driven more by trade with the US. These differences in export patterns with respect to the EU and US are reflected in our employment results.

The scope of the study is necessarily limited by the databases used in the analysis. The SAMs and labour force surveys used cover both formal and informal establishments and workers, and in this sense are comprehensive. But our trade data for the EU (from Eurostat) and the US (US International Trade Commission) do not include trade in services. From 1990 to 2006, trade in services increased as a percentage of GDP from 3 to 15 percent in India. While trade in services during the crisis has been referred to as "the collapse that wasn't," service exports did decline substantially for India, though not as much as merchandise exports. In this sense, our study underestimates the effects of trade contraction in the crisis. Our study does, however, address the indirect and income-induced effects of trade contraction on service industries, which turn out to be substantial. For the sake of expediency, we define tradeable goods industries as those for which we have trade data and define all other industries as non-tradeable, including service industries.

3. Employment results:

In developing countries with extensive informal employment and underemployment, the estimation of changes in employment via changes in production is not straightforward. This holds particularly for India, where as of 1999-2000, the vast majority of workers were in the "unorganized" sector – 77 percent in urban areas and 95 percent in rural areas. In this sense, what we refer to as employment declines may in fact translate into movements from formal into informal employment or increases in underemployment, but in any case means a negative impact for workers on average through some combination of employment declines and losses of income. These qualifications should be born in mind when considering the following results.

Employment results based on Type II multipliers are presented in absolute and relative terms in Table 1 for scenarios A and B respectively. This table shows the number of FTE jobs and the number of such jobs as a percentage of SAMs base year employment, broken down between trade with the EU and US and between tradeable goods and non-tradeable industries, based on the availability of trade data.

Table 1: Employment Effects from Trade in INDIA (Type II multiplier)

	Scenario A			Scenario B		
Number of jobs (FTE)	EU	US	EU&US	EU	US	EU&US
Tradable goods industries	-1'163'804	-2'088'266	-3'252'070	-3'741'618	-4'400'303	-8'141'920
Non-tradable industries	-195'327	-496'734	-692'061	-845'412	-1'076'805	-1'922'217
All industries	-1'359'131	-2'585'000	-3'944'131	-4'587'030	-5'477'108	-10'064'137
Number of jobs as a % of SAMs base year employment						
	EU	US	EU&US	EU	US	EU&US
Tradable goods industries	-0.46	-0.82	-1.28	-1.47	-1.73	-3.20
Non-tradable industries	-0.19	-0.48	-0.66	-0.81	-1.03	-1.84
All industries	-0.38	-0.72	-1.10	-1.28	-1.53	-2.81

India's trade with the EU and US together, employment declines are estimated to be 3.9 million FTE jobs for all industries based on scenario A and 10.1 million based on scenario B – equivalent to 1.1 and 3.2 percent of base year employment. That is, trade contraction during the crisis is estimated to have resulted in 3.9 million "jobs lost" and an additional 6.2 million "jobs not created," as we have defined these. The large estimate for "jobs not created" reflects the rapid growth of exports from India prior to the crisis. Employment declines are driven more by trade with the US than the EU. Estimated employment declines for non-tradeable industries are substantial, even though these do not include direct trade effects for these industries. These are equivalent to 17.6 and 19.1 percent of estimated employment losses for all industries based on scenarios A and B respectively.

Results based on Type I multipliers are presented in absolute and relative terms in Table 2 for scenario A. Additionally presented are Type I multiplier employment effects as a share of Type II multiplier employment effects, shown in the bottom panel. Income induced employment effects as a percentage of total employment effects (based on Type II multipliers) are therefore equal to 100 minus the percentage shown in this bottom panel. For India, taking EU and US trade together, the share of total employment effects resulting from income-induced effects is about one-half for tradeable goods industries, two-thirds for non-tradeable industries, and one-half for all industries.

Table 2: Employment Effects from Trade (Type I multiplier)

Scenario A			
Number of jobs (FTE)	EU	US	EU&US
Tradable goods industries	-690'242	-938'041	-1'628'284
Non-tradable industries	-66'781	-184'512	-251'292
All industries	-757'023	-1'122'553	-1'879'576
Number of jobs as a % of SAMs base year employment			
	EU	US	EU&US
Tradable goods industries	-0.27	-0.37	-0.64
Non-tradable industries	-0.06	-0.18	-0.24
All industries	-0.21	-0.31	-0.52
Type I multiplier jobs as a % of Type II multiplier jobs			
	EU	US	EU&US
Tradable goods industries	59.3	44.9	50.1
Non-tradable industries	34.2	37.1	36.3
All industries	55.7	43.4	47.7

Income induced effects play an important role in accounting for employment declines resulting from trade contraction in the crisis. It is worth noting, in this regard, that income induced effects likely make up a higher share of total effects in poorer countries, a result of the combination of Engel's Law (with high shares of income spent on food) and low labour productivity in agriculture. For this we provide further detail in our discussion of agriculture in industry-level results. The implication is that analyses relying only on Type I multipliers provide a systematically less complete picture of total effects in poorer than richer countries. Also worth remark is the much lower share of Type I multiplier employment estimates in tradeable goods industries resulting from indirect effects in India (27 percent).

This is consistent with India's greater reliance on domestic inputs for export production.

In sum, we estimate that India experienced sizeable employment decline as a result of trade contraction with the EU and US during the 2008-09 global crisis, even based on our more conservative scenario A. In India, a large share of these employment declines occurred in non-tradeable industries through indirect and income-induced effects originating from tradeable goods industries. Income-induced effects also accounted for sizeable shares of estimated employment losses in tradeable goods industries. An important policy consideration is that even if a country's financial institutions were relatively protected from the turmoil of the crisis, employment and incomes may be hit hard nonetheless through resulting trade contraction, with strong ripple effects throughout the economy.

4. Industry-level results:

Country studies evaluating the industry-level effects of trade liberalization on employment commonly find patterns of winning and losing industries. As the WTO's *World Trade Report 2008* puts it, "most trade models are designed to answer two closely related questions: what goods do countries trade and why". The compositional effect" can provide useful guidance in this regard, describing as it does particularly rapid trade declines for "postponeable" consumer durable and investment goods. Trade patterns for India provide some support for the "compositional effect." For example, the three industries with the greatest drop in exports to the EU and US (taken together) can be classified as "postponeable" consumer durable and investment goods. Yet not all industries fit neatly into this pattern, for there were increases in exports of chemicals for both India and South Africa, and large declines in exports of agriculture and manufactured food products for India. Moreover, the effect of industry-level changes in exports on industry-level changes in employment is somewhat roundabout, mediated as it is by indirect and income-induced effects as well as by differences in the labour-intensity of production across industries.

Industry-level results based on Type II multipliers are expressed in absolute terms for trade with the EU and US separately and together and in relative terms for the EU and US together. Also shown are percentages of female and less-educated workers in SAMs base years. The upper panel of these tables shows tradeable goods industries, with manufacturing industries shaded, and the lower panel shows non-tradeable industries. For India looking at trade with the EU and US together, only two of 37 industries (23 of these tradeable goods industries) are estimated to gain employment: fishing and rail equipment and other transport equipment, with estimated increases of about 18,000 and 12,000 jobs respectively, small in comparison to overall estimated employment declines.

In absolute terms, agriculture had far and away the largest estimated employment declines, accounting for 2.2 million of the estimated 3.9 million jobs lost economy wide. As noted above, given extensive informal employment and also subsistence agriculture in India, these estimated job losses would be made manifest in a combination of job loss and loss of income. Because the agricultural sector in India is so large, however, estimated employment declines from trade contraction relative to 2003/4 employment are actually somewhat smaller than for the economy as a whole (1.07 versus 1.10 percent).

Note that these results are based on a Type II multiplier, which accounts for income induced effects on top of direct and indirect effects. Applying a Type I multiplier indicates that 780,000 of the 2.2 million estimated employment decline in agriculture results from direct and indirect effects, with the difference of 1.4 million resulting from income induced effects. For the economy as a whole, applying a Type I multiplier indicates that 1.9 million of the 3.9 million estimated employment decline results from direct and indirect effects, with the difference of 2.0 million resulting from income induced effects (Table 2). Focusing on income induced effects, comparing the 1.4 million for agriculture with 2.0 million for the economy as a whole means that about 70 percent of economy-wide income induced effects is accounted for by the agriculture alone. This supports the notion that income induced effects make up a higher share of total effects in poorer countries, a result of a combination of Engel's Law and low labour productivity in agriculture. Note that in both India and South Africa, the labour intensity of agriculture was five times higher than for the economy as a whole.

In relative terms, the industries with the largest estimated employment declines in India are misc. manufacturing, which includes gems and jewelry (7.8 percent of 2003/04 employment), jute, hemp and mesta textiles (4.3 percent, though with small absolute declines), iron, steel and non-ferrous metals (3.9 percent), non-electrical machinery (3.2 percent), furniture and wood products (3.2 percent) and metal products (3.1 percent). Some of these industries are of a similar type, such as iron, steel and non-ferrous metals, metal products and non-electrical machinery, all metal-based heavy industries. But these industries vary in other respects. For example, while furniture and wood products is labour-intensive and reliant on less educated workers, non-electrical machinery is capital-intensive and skills-intensive.

5. Conclusions:

Earning the appellation "The Great Trade Collapse," trade contraction was a more important cross-border transmission channel in the global crisis of 2008-09 than in any previous post-World War II crisis. This development caught many policy-makers off-guard, who had reasonably focused their concerns on financial transmission channels. The magnitude of trade contraction during the crisis arguably resulted from "compositional" and "synchronicity" effects, manifestations of our current wave of globalization very much at odds with the notion of "decoupling."

This study finds that declining exports to the EU and US during "The Great Trade Collapse" had substantial negative effects on employment in India. The effects of trade contraction swept widely across these countries. The vast majority of industries are estimated to experience employment declines as a result of trade contraction, in both tradeable and non-tradeable sectors. Even though the shock originated in the tradeable goods sector, a large share of total estimated employment declines result from ripple effects in non-tradeable industries. Moreover, a large share of estimated employment declines are income-induced, for which we argue an important determinant is a combination of Engel's Law (with higher shares of income spent on food in poorer countries) and low labour productivity in agriculture in India.

Also illustrating the sweeping effects of "The Great Trade Collapse" is that households in rural and urban areas are similarly affected by income losses. Consistent with this, agriculture is estimated to be the hardest hit of all industries in terms of absolute employment declines. For example, indirect employment effects *within* the tradeable goods sector (resulting from production linkages) are a good deal more important in India with India's greater reliance on domestic inputs for export production. As suggested by our estimates of agriculture having the largest absolute employment declines, with this being manifested in decline of employment.

The importance of trade as a transmission channel has particular bearing on countries like India and South Africa that have rapidly opened up to international trade in recent years. International trade is arguably a necessity for developing countries aiming to narrow the technology gap with developed countries, for it enables them to earn foreign currency and purchase foreign technology. Yet the global crisis also reveals how greater trade openness can be a source of vulnerability in a volatile global economy, presenting a significant challenge to policy-makers.

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