



Do economic reforms matter for manufacturing productivity? Evidence from the Indian experience[☆]

Saibal Ghosh

Department of Economic Analysis and Policy, Reserve Bank of India, Central Office, Fort, Mumbai 400 001, India

ARTICLE INFO

Article history:

Accepted 10 January 2013

JEL classification:

D24
L60
O47

Keywords:

Economic reforms
Total factor productivity
Levinsohn–Petrin
Indian manufacturing

ABSTRACT

Using data on 3-digit industry for 1981–2004, the study examines the association between total factor productivity and economic reforms. We first obtain the industry-level productivity numbers using advanced econometric techniques and thereafter ascertain the time frame over which economic reforms impact productivity. The evidence suggests that productivity growth is not reliably higher after reforms than prior to reforms. At the sectoral level, the interest rate channel and also the financial accelerator and labor market variables play an important role in explaining productivity improvements. At the macroeconomic level, trade policy, foreign direct investment and credit availability are found to be important in accounting for productivity growth.

© 2013 Elsevier B.V. All rights reserved.

1. Introduction

A major focus of any structural reforms program is to put the country on a higher growth trajectory on a sustainable basis. A key component of achieving sustainable growth is to register consistent improvements in productivity. In fact, a significant body of literature has confirmed that the gap in income per capita between rich and poor countries is associated with large cross-country differences in total factor productivity (Hall and Jones, 1999; Howitt, 2000; Klenow and Rodriguez-Clare, 1997; Klenow and Rodriguez-Clare, 2005). Whether and to what extent such productivity differences can be traced to differences in manufacturing productivity remains an area of on-going debate. Evidence on this score is far from unambiguous; some studies report manufacturing productivity as an important factor for differential economic growth across nations (Dollar and Wolff, 1993; Van Bart, 1993; Van Bart and Pilat, 1993), others find it to be much less relevant (Caves et al., 1982; Harrigan, 1999; von Wachter, 2001).

We employ the natural experiment of the economic reforms to examine the interface between economic reforms and total factor productivity (TFP) of industries at the 3-digit level, using India as a case study. The production function is estimated following the methodology suggested by Levinsohn and Petrin (2003) so as to control

for endogeneity problems that emanate from the simultaneous choice of inputs and output by the industry.

Studies on this aspect for India report changes in productivity (either improvement or declines) in the post-reform period, but do not quantify the period over which such productivity gains occur. Following from Aghion et al. (2005), since the pre-reform productivity (and consequently, the technological capability) of industries is expected to differ significantly, it seems likely that economic reforms would further magnify the productivity differentials. Accordingly, we explore the time period over which changes in productivity accrue to industries. In addition, we also introduce a set of industry-level variables to ascertain which set of factors plays an important role in influencing productivity.

The choice of India as a case study rests on three considerations. First, India is presently one of the most important emerging economies with a rich history of industrial controls. These controls were introduced in the aftermath of independence in order to dovetail investment into desirable areas within a mixed economy framework through a process of industrial licensing. Second, like most developed economies, India has a large and diversified manufacturing sector. Over time, industries have tended to develop distinct characteristics, driven by a combination of regulatory policies as well as factors internal to the organization. The question, therefore, remains as to what extent productivity varies across industries. Third, India has a rich history of industry-level database. The cross-sectional and time series variation in the data makes it amenable to econometric analysis and provides an ideal laboratory to examine the factors affecting TFP and its interaction with economic reforms.

The study contributes to the extant literature in a few important ways. First, it expands the literature on industrial productivity in

[☆] I would like to thank, without implicating Prof. Amil Petrin for the clarifications of the use of the productivity methodology and especially an anonymous referee, which greatly improved the analysis and exposition. Needless to state, the views expressed and the approach pursued in the paper are the author's personal opinion.

E-mail address: saibal@gmail.com.

the context of an emerging economy. The study of productivity is relevant because productivity is a catch-all measure of performance. Thus, productivity analysis may be pertinent to those involved in M&A issues, like industry practitioners and competition authorities. Also, to the extent that low productivity can act as an early warning signal, policy practitioners can utilize productivity measures as an additional monitoring instrument.

Second, the study is also related to the channels of monetary transmission. Following from the literature, we distinguish between the financial accelerator channel, in addition to the traditional interest rate channel, by constructing proxies that act as determinants of these channels. By regressing the productivity responses on a set of independent variables that acts as proxies for these channels, we are able to discern which sets of variables are influential in explaining the variation in manufacturing productivity response in the Indian case.

Third, the paper examines the role of institutions, focusing on labor laws in general and industry-level trade unionism, in particular. Besley and Burgess (2004), for instance, document that states with more pro-labor regulation had lower levels of manufacturing development. These states also exhibited higher levels of unionization. Ever since their work, a substantial volume of literature has examined the consequences of constrictive labor rules on state manufacturing output in India (Aghion et al., 2008; Ahsan and Pages, 2009; Hasan et al., 2007; Sanyal and Menon, 2005). Judged from this standpoint, it can be argued that the regulatory framework governing industrial disputes could be an important ingredient influencing industrial productivity, an aspect we consider in our analysis.

Fourth, the paper also explores the micro and macroeconomic factors influencing productivity. Observers have highlighted the role of several factors, both at the microeconomic level such as industry size, capital intensity and leverage as well as macroeconomic level including trade, industrial and financial policies in influencing productivity growth, although none have considered these factors in a holistic fashion. By taking on board both the microeconomic (industry characteristics) as well as the macroeconomic factors, it provides a far more comprehensive picture of the reasons for productivity changes across industries than that considered by previous researchers.

Finally, the paper recognizes the role of human capital in influencing manufacturing productivity in India. Starting with the seminal work of Schultz (1961) and Becker (1964), a significant body of research has demonstrated the importance of human capital in fostering economic growth (Lucas, 1988; Mankiw et al., 1992; Romer, 1990). In the Indian context, Bosworth and Collins (2008) for instance demonstrate a positive impact of human capital on India's output growth. However, studies on Indian manufacturing fail to take this aspect on board, an area that the present analysis seeks to address.

The remainder of the analysis continues as follows. In Section 2, we provide an overview of the Indian industrial experience, as appropriate, and the position of this paper in that context. Section 3 describes the methodology to be applied in the empirical sections. Section 4 discusses data-related issues. Section 5 estimates the coefficients of the production function, from which the industry level productivity measures are calculated. Section 6 studies the determinants of manufacturing productivity and explores the interface between reforms and productivity. Contextually, it also highlights the role played by various industry-level factors. Section 7 concludes the paper.

2. Industrial policy and growth

The introduction of the concept of a socialist economy in the 1960s with its concomitant focus on poverty reduction, egalitarianism and social equality meant that the Federal government pursued highly restrictive policies with respect to trade, industry and finance. The process of transition towards self-reliance, driven to an overarching extent by concerns of 'export pessimism' among developing

nations nested on the logic of heavy-industry oriented industrialization within a closed economy framework. Such a policy engendered the need for industrial licensing whereby firms had to apply for a license for setting up new units or for capacity expansion. In effect, the policy exerted multiple controls over private investment that limited areas in which private investors were allowed to operate and also determined the scale of operations, the location of new investments and even the technology employed. This was buttressed by a highly protective trade policy, often providing tailor-made protection to each sector of industry. The costs imposed by these policies have been extensively studied (Bhagwati and Desai, 1970; Bhagwati and Srinivasan, 1975; Mookherjee, 1995), and by 1991, a consensus emerged on the need for greater liberalization and openness.

The structural break engendered by economic reforms laid strong emphasis on enabling markets and globalization coupled with lower degrees of direct government involvement in economic activities. The list of industries reserved solely for the public sector was gradually scaled down and reduced to three: defense aircrafts and warships, atomic energy generation and railway transport. The process of industrial licensing by the Federal government was abolished, except for a few hazardous and environmentally-sensitive industries. The requirement that investment by large houses needs a separate clearance under the *Monopolies and Restrictive Trade Practices Act* to discourage the concentration of economic power was replaced by a new competition law that focused on regulating anti-competitive behavior.

The net effect of these measures was a modest improvement in industrial growth. From an average of 4% in the 1970s and around 6.5% in the 1980s, industrial growth averaged around 6% during 1991–2004, perhaps reflecting the effect of liberalization of various controls. Over the entire period beginning 1980 through 2004, industrial growth has been roughly of the order of 6.1% (Kohli, 2006).

Concomitant with the process of deregulation, there have also been attempts to ascertain when economic reforms have led to any perceptible changes in manufacturing productivity (See, for example, Balakrishnan et al., 2006; Balakrishnan and Suresh Babu, 2003; Goldar, 1986; Srivastava, 1996). Studies on this count are inconclusive, at best. Early studies documented a decline in TFP during the 1970s and a turnaround (driven primarily by an increase in labor productivity) in the first half of the 1980s (Ahluwalia, 1991). These findings were echoed in several other studies (Ray, 2002; Krishna and Mitra, 1998; Pattnayak and Thangavelu, 2005; Unel, 2003) which also reported improvements in TFP, post reforms. Others (Goldar and Kumari, 2003) have, however, uncovered evidence that economic reforms adversely impacted productivity. By way of example, Goldar and Kumari (2003) indicate a fall in the growth rate of TFP in Indian manufacturing from 1.9% per annum during 1981–1991 to 0.7% during 1991–98. Balakrishnan et al. (2000) and Srivastava (2001) also identify a slowdown in TFP growth in Indian manufacturing in the post-reform period. Contextually, Driffeld and Kambhampati (2003) report improvements in firm-level efficiency across six manufacturing industries in India, which they attribute more to the effect of trade liberalization. However, the methodology of TFP computation in these studies suffers from several shortcomings. To address this deficiency, we employ advanced econometric techniques to compute productivity and subsequently relate it to the set of factors, both at the industry and economy-wide level, to ascertain the factors influencing them.

The analysis which comes closest to the spirit of the present paper is Aghion et al. (2005). Using data on 3-digit manufacturing industries for 16 major Indian states covering 1980–97, they address the issue as to how technological capability of industries affects their response to a 'shock', defined as the trade liberalization in 1991. Although this shock was common across firms in the same industry; however, firms in different states in the same 3-digit industry varied in terms of their level of pre-reform productivity, which was taken as a proxy of their technological capability. The results demonstrated that state-industries with higher pre-reform technological capability

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات