Industrial subsidies and technology adoption in general equilibrium

Roberto M. Samaniego*

Department of Economics, George Washington University, 1922 F St NW Suite 208, Washington, DC 20052, USA

Received 1 October 2004; accepted 15 September 2005
Available online 2 May 2006

Abstract

Industrial subsidies to failing establishments are common across developed economies. The paper constructs a dynamic general equilibrium model with a view to study the effects of this policy. Interestingly, subsidies to failing plants may increase productivity and accelerate the diffusion of new technologies. In spite of this, labor productivity, employment and income decrease, as resources are devoted to maintaining and updating establishments that would otherwise have closed.

© 2006 Elsevier B.V. All rights reserved.

JEL classification: E62; H25; J6; L5; O33; O38

Keywords: Industrial subsidies; Investment-specific technical change; Technology adoption; Plant lifecycle; Failing plant

1. Introduction

A significant portion of public expenditure in many countries is directed towards the support of production units and, while some of these outlays support R&D and
other innovative activities, more often than not they are directed towards establish-
ments that are unproductive.

The paper asks what are the quantitative effects of industrial subsidies to failing
establishments. This question is of interest for several reasons. First, such policies
may have a significant effect on aggregate productivity via changes to the
composition of the establishment pool. Second, an extensive literature examines
the aggregate effects of labor market regulations, particularly those that impose
penalties upon establishments that are reducing their workforce. This is partly
because differences in institutional firing costs have been pinpointed as a likely cause
of the divergent labor market outcomes of the US and Europe.\(^1\) However, several
authors have observed that Western European plants that were failing and needed to
reduce their payrolls in recent decades were less likely to be taxed than subsidized\(^2\).
Consequently, the effect of industrial support upon employment is of particular
interest. Third, a policy that directly affects the establishment lifecycle could have
significant implications for plant dynamics. Hazard rates, job flows and patterns of
technological adoption are just some features that could be affected.

In the paper, I develop a general equilibrium model of establishment dynamics.
Surviving units gradually fall behind the best practice technology, and may choose in
each period whether to upgrade, continue dropping behind, or shut down. Into this
environment I introduce industrial support to failing establishments.

Interestingly, subsidies have the effect of increasing the average productivity of
plants in operation. This is because an establishment’s optimal technology adoption
rule follows an \((S,s)\) policy, censored by the decision to exit in the face of sufficiently
adverse conditions. As a result, subsidies that enable plants to survive longer allow
more of them to enter the stage of their life at which renewing their technology
becomes optimal. Thus, the underlying determinants of technological adoption are
an important part of the response of the economy to industrial support. Nonetheless,
the economy spends a lot of resources on keeping alive plants that would otherwise
have shut down, and this results in a reduction in both output and employment on
the aggregate.

That the details of the plant lifecycle might be related to the aggregate effects of
public finance regimes has not been raised in the literature. Fuest and Huber (2000)
and Restuccia and Rogerson (2004) study the effects of industrial subsidies: however,
their models lack any lifecycle dynamics, and their subsidies are not directed towards
failing plants – indeed there is no notion of a failing plant in those models. Samaniego (2006a)
articulates such a notion to study the effects of firing costs upon
exit, but does not consider industrial subsidies nor technology adoption.

Section 2 provides an overview of industrial subsidies, and Section 3 introduces
the theoretical model. Section 4 characterizes the equilibrium behavior of the model,
and Section 5 outlines the calibration procedure. Section 6 studies the effects of
industrial support in the context of the model.

---

\(^1\)See Bentolila and Bertola (1990) and Lazear (1990), inter alia.

\(^2\)See Ford and Suyker (1990), Leonard and Van Audenrode (1993), OECD (1996), Murphy and
Pretschker (1998) and Fuest and Huber (2000).
دریافت فوری
متن کامل مقاله

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