

Determinants Of Productivity At Firm And Industry Level

This paper examines two potential channels of knowledge acquisition that underlie firm productivity growth in the Taiwanese electronics industry: participation in the export market and investments in R & D and/or worker training. We focus on the argument that a firm's own investments in R & D are necessary for the firm to assimilate knowledge or expertise gained from foreign contacts and thus are an important component of the process of learning-by-exporting. Firm-level panel data from 1986, 1991, and 1996 is used to investigate a firm's decision to invest in these two activities and to assess the effects of these investments on the firm's future total factor productivity. The empirical model consists of four equations. The firm's decisions to export and invest in R & D and/or worker training are modeled with a bivariate probit model that recognizes the interdependence of the decisions. We then estimate how participation in these investment activities alters the firm's future productivity trajectory while controlling for the potential selection bias introduced by endogenous firm exit. The primary empirical findings are that, on average, firms that export but do not invest in R & D and/or worker training have significantly higher future productivity than firms that do not participate in either activity. In addition, firms that export and invest in R & D and/or worker training have significantly higher future productivity than firms that only export. These findings are consistent with the hypothesis that export experience is an important source of productivity growth for Taiwanese firms and that firm investments in R & D and worker training facilitate their ability to benefit from their exposure to the export market. The project 'EU Integration and the Prospects for Catch-Up

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Development in CEECs - The Determinants of the Productivity Gap' was concerned with establishing knowledge about determinants of lower levels of productivity in the new member states of Central East Europe (CEE). This knowledge pertains to the most important determinants of aggregate (labour) productivities: sectoral structures of specialisation both in domestic production and in foreign trade; conditions within National Innovation Systems of CEECs; potentials for technology transfer via foreign direct investment in the regions; deficiencies of manufacturing firms in the new member states of Estonia, Poland, the Czech and Slovak Republics, Hungary and Slovenia. This knowledge is comparative in nature (between CEECs and with the EU). The project generated in particular two unique databases by way of field work, the 'CEE subsidiary database' focussed on the relationship between parent, subsidiary, and host economy, and the 'CEE firm-specific productivity determinants database' focussed on machinery, cosmetics, electrotechnical, and furniture manufacturers. The knowledge and databases were generated with a view on providing the necessary knowledge to devise economic policy both at national and EU levels to assist swift catching up of CEECs to West European productivity levels. The main findings of the project can be summarised in the following points: sectoral specialisation patterns explain some of the productivity gaps in the Slovak Republic, Hungary, and Poland; industrial sectors (i.e. a lower technological level in industry) are the most important sources of productivity gaps in all newly acceded countries; specialisation patterns in CEECs' manufacturing industries suggest very different potentials for future productivity growth rates (here, the best prospects are predicted for the Slovak Republic, Slovenia, and Hungary, the worst for Poland and Estonia); in foreign trade, a product-quality-cycle could be identified for vertical intra-industrial

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trade, where the EU exports products of higher quality and CEECs exports less sophisticated products (restricting catch-up but not technological upgrading); weaknesses in CEECs' national systems of innovation lie mainly in 'broad' (macro-institutional context of innovation) rather than 'narrow' (institutions involved in R & D) systems, and are barriers to future sustainable (i.e. technology-led) growth; whilst foreign direct investment plays an important role in technological development in CEECs, the existence of a variety of different kinds of subsidiaries in the region (with respect to the relationship between parent, subsidiary, and host economy) suggests very different potentials for technology transfer, with Hungary and the Slovak Republic containing the largest potentials (albeit due to different reasons), and Slovenia and Poland the lowest potentials; whilst social adaptive capabilities in CEECs in terms of technology transfer have not turned out to be a 15 critical problem (mainly because it was seriously addressed by foreign investors through training), the domestic firms (as e.g. suppliers) in CEECs are considered rather second and third-tier and hence cannot benefit to a large extent unless taken over by a foreign investor; at the firm-level, the most important determinants of lower productivity levels are related to management expertise, in particular networking and strategic planning, and investment intensities; in terms of economic policy, the results suggest that swift productivity catch-up is most efficiently assisted by a rather classical policy-mix of increasing competition (long tail of weak firms), increasing flexibility for intra and intersectoral migration, some form of support for investment, in particular into infrastructure, and (management) training programmes with a focus on marketing and strategic management in a modern competitive market economy.

"The author studies the determinants of total factor productivity (TFP) for manufacturing firms in Bangladesh

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using data from a recent survey. She obtains TFP measures by making use of firm-specific deflators for output and inputs. Controlling for industry, location, and year fixed effects, she finds that: (1) firm size and TFP are negatively correlated; (2) firm age and TFP exhibit an inverse-U shaped relationship; (3) TFP improves with the quality of the firm's human capital; (4) global integration improves TFP; (5) firms with research and development activities and quality certifications have higher TFP, while more advanced technologies improve TFP only in the presence of significant absorptive capacity; (6) power supply problems cost firms heavily in terms of TFP losses; and (7) the presence of crime dampens TFP. "--World Bank web site.

In a companion study to that of Griliches and Mairesse for the United States, we have investigated the relationship between output, labor, and physical and R&D capital during the 1972-1977 period for a sample of 182 R&D performing firms in the French manufacturing industries. Our results are quite comparable to those obtained for the U.S. The relationship between firm productivity and R&D appears both strong and robust in the cross-sectional dimension of the data; it is less so in the time dimension. However, the within-firm estimates are still significant and of a likely order of magnitude. In this respect, they are more satisfactory than the U.S. ones. We show that this is largely due to a better measurement of the variables: (1) the fact that we can use a value-added measure of output instead of sales (or equivalently that we include materials among the factors of the production function); (2) the fact that we can correct the measures of labor, physical capital and output for the double counting or expensing out of the labor, capital and materials components of R&D expenditures.

This paper combines different strands of the productivity literature to investigate the effect of idiosyncratic (firm-level)

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policy distortions on aggregate outcomes. On the one hand, a growing body of empirical research has been relating cross-country differences in key economic outcomes, such as productivity or output per capita, to differences in policies and institutions that shape the business environment. On the other hand, a branch of empirical research has attempted to shed light on the determinants of productivity at the firm level and the evolution of the distribution of productivity across firms within each industry. In this paper, we exploit a rich source of data with harmonized statistics on firm level variation within industries for a number of countries. Our key empirical finding is that there is substantial variation in the within-industry covariance between size and productivity across countries, but this covariance varies significantly across countries and is affected by the presence of idiosyncratic distortions. We develop a model in which heterogeneous firms face adjustment frictions (overhead labor and quasi-fixed capital) and idiosyncratic distortions. We show that the model can be readily calibrated to match the observed cross-country patterns of the within-industry covariance between productivity and size and thus help to explain the observed differences in aggregate performance. Productivity growth in Italy has been persistently anemic and has lagged that of the euro area over the period 1999-2015, while the indebtedness of its corporate sector has increased. Using the ORBIS firm-level database, this paper studies the long-term impact of persistent corporate-debt accumulation on the productivity growth of Italian firms and investigates whether total factor productivity growth varies with the level of corporate indebtedness. We employ a novel estimation technique proposed by Chudik, Mohaddes, Pesaran, and Raissi (2017) to account for dynamics, bi-directional feedback effects, cross-firm heterogeneity, and cross-sectional dependence arising from unobserved common factors (for

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example, oil price shocks, labor and product market frictions, and stance of global financial cycle). Filtering out the effects of unobserved common factors and controlling for firm-specific characteristics, we find significant negative effects of persistent corporate debt build-up on total factor productivity growth, and weak evidence of a threshold level of corporate debt, beyond which productivity growth drops off significantly. Our results have strong policy implications, for example the design of the tax system should discourage persistent corporate debt accumulation, and effective and timely frameworks to reduce corporate debt overhangs are essential.

January 2001 This rich new database on 4,000 Asian firms--operating in Indonesia, the Republic of Korea, Malaysia, the Philippines, and Thailand--focuses on the impact of Asia's economic crisis and on the longer-run determinants of productivity, employment practices, and financial structure. Researchers have decried the limited supply of objective, comparable firm-level data from developing countries. Hallward-Driemeier describes a new database that helps fill this information gap. The database has detailed records on 4,000 firms operating in Indonesia, the Republic of Korea, Malaysia, the Philippines, and Thailand. A comparable survey instrument and sampling methodology was used in each country, and all five studies were carried out simultaneously. The data cover three years (1996-98), allowing for measurements of firm performance before and immediately after the East Asian financial crisis. The questionnaire focused on measuring the impact of the regional financial crisis at the microeconomic level and understanding the longer-run determinants of productivity, employment practices, and financial structure. This database--the first step in the important Firm Analysis and Competitiveness Surveys initiative that the World Bank is

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spearheading--will be joined by additional country databases. The aim is to fill the gap in much-needed microeconomic evidence using comparable instruments. This paper--a product of Macroeconomics and Growth, Development Research Group--is part of a larger effort in the group to collect comparable firm-level information from developing countries. The research was funded by the Bank's Research Support Budget under the research project "Impact of the East Asian Crisis" (RPO 632-28). The author may be contacted at mhallward@worldbank.org.

Some countries support smaller firms through tax incentives in an effort to stimulate job creation and startups, or alleviate specific distortions, such as financial constraints or high regulatory or tax compliance costs. In addition to fiscal costs, tax incentives that discriminate by firm size without specifically targeting R&D investment can create disincentives for firms to invest and grow, negatively affecting firm productivity and growth. This paper analyzes the relationship between size-related corporate income tax incentives and firm productivity and growth, controlling for other policy and firm-level factors, including product market regulation, financial constraints and innovation. Using firm level data from four European economies over 2001–13, we find evidence that size-related tax incentives that do not specifically target R&D investment can weigh on firm productivity and growth. These results suggest that when designing size-based tax incentives, it is important to address their potential disincentive effects, including by making them temporary and targeting young and innovative firms, and R&D investment explicitly.

A. Dogramaci and N.R. Adam Productivity of a firm is influenced both by economic forces which act at the macro level and impose themselves on the individual firm as well as internal factors that result from decisions and processes

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which take place within the boundaries of the firm. Efforts towards increasing the productivity level of firms need to be based on a sound understanding of how the above processes take place. Our objective in this volume is to present some of the recent research work in this field. The volume consists of three parts. In part I, two macro issues are addressed (taxation and inflation) and their relation to productivity is analyzed. The second part of the volume focuses on methods for productivity analysis within the firm. Finally, the third part of the book deals with two additional productivity analysis techniques and their applications to public utilities. The objective of the volume is not to present a unified point of view, but rather to cover a sample of different methodologies and perspectives through original, scholarly papers.

Advanced economies have been witnessing a pronounced slowdown of productivity growth since the global financial crisis that is accompanied in recent years by a withdrawal from trade integration processes. We study the determinants of productivity slowdown over the past two decades in four closely integrated European countries, Austria, Denmark, Germany and the Netherlands, based on firm-level data. Participation in global value chains appears to have affected productivity positively, including through its effect on TFP when facilitated by higher investment in intangible assets, a proxy for firm innovation. Other contributors to productivity growth in firms are workforce aging, access to finance, and skills mismatches.

This paper examines the determinants of productivity in Japanese manufacturing industries, looking particularly at the impact of product market competition on productivity. Using a newly available panel data on around ten thousand firms in Japanese manufacturing for the years 1994-2000, I show that competition, as

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measured by lower level of industrial price-cost margin, enhances productivity growth, controlling for a broad range of industrial and firm-specific characteristics. Moreover, I suggest that market power, as measured by either individual firm's price-cost margin or market share, has negative impact on productivity level of R&D performing firms.

This book takes a comprehensive look at Japanese firms engaging in export and foreign direct investment (FDI) and develops new methods and data to investigate the internationalization of firms, which is a focus issue in international trade. Using micro-level data, the book provides an introduction to theoretical and statistical analysis of internationalization modes of Japanese firms with productivity heterogeneity. It makes clear that although the productivity of internationalized Japanese firms is higher on average than that of firms serving only the domestic market, the difference in productivity between exporters and FDI firms is not as obvious in comparison with that of their counterparts in the United States and Europe. Focusing on this point, the book analyzes not only productivity heterogeneity among firms, but also the differences in firm-specific factors other than productivity: industry-specific factors, market-specific factors such as market size and variable and fixed costs for export, and FDI in destination countries. This in-depth investigation reveals how those factors make the modes of Japanese firms' internationalization different from those in the United States and Europe. Further analysis focuses on the effects of match quality, organizational and institutional factors in the market on

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firms' exports, and FDI. As an approach to the current trends in international trade, this book is unique in using detailed firm-level panel data drawn from Japanese government statistics.

This paper uses data from a nationwide sample of firms on employee wages and characteristics to reexamine the determinants of employee productivity and earnings. The data include several measures of job experience, training, and both worker and firm characteristics as well as subjective employer productivity ratings and earnings of workers. Given observations on the same individual at different points in time, we can consider both levels and changes in earnings and productivity, with various firm- and job-specific effects eliminated from the latter. The results show that: 1) Both previous experience and tenure in the current job have significant, positive effects on wages and productivity. Previous experience effects are found primarily on levels of wages and productivity while tenure affects occur for both current levels and changes. 2) Hours of training are positively related to productivity and wage growth but generally not to levels of either. 3) Among demographic characteristics, we find productivity growth and current productivity levels to be slightly higher for females while their wages are significantly lower. Other determinants of earnings and productivity ratings (e.g., such as various types of incentive pay and the fraction unionized) are considered here as well

Karin Hoisl is concerned with innovation processes and the involved inventors. Her focus is on the determinants of inventor productivity, the relationship between inventor

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mobility and inventor productivity, and the establishment of efficient incentive systems to commit key inventors to the firm.

This volume uses the study of firm dynamics to investigate the factors preventing faster productivity growth in Latin America and the Caribbean, pushing past the limits of traditional macroeconomic analyses. Each chapter is dedicated to an examination of a different factor affecting firm productivity - innovation, ICT usage, on-the-job-training, firm age, access to credit, and international linkages - highlighting the differences in firm characteristics, behaviors, and strategies. By showcasing this remarkable heterogeneity, this collection challenges regional policymakers to look beyond one-size-fits-all solutions and create balanced policy mixes tailored to distinct firm needs. This book is open access under a CC BY-NC-ND 3.0 IGO license.

Productivity has again moved to center stage in two critical academic and policy debates: the slowing of global growth amid spectacular technological advances, and developing countries' frustratingly slow progress in catching up to the technological frontier. *Productivity Revisited* brings together the new conceptual advances of 'second-wave' productivity analysis that have revolutionized the study of productivity, calling much previous analysis into question while providing a new set of tools for approaching these debates. The book extends this analysis and, using unique data sets from multiple developing countries, grounds it in the developing-country context. It calls for rebalancing away from an exclusive focus on misallocation toward a greater focus on upgrading firms and facilitating the emergence of productive new establishments. Such an approach requires a supportive

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environment and various types of human capital--managerial, technical, and actuarial--necessary to cultivate new transformational firms. The book is the second volume of the World Bank Productivity Project, which seeks to bring frontier thinking on the measurement and determinants of productivity to global policy makers.

The first chapter is titled "Productivity As If Space Mattered: An Application to Factor Markets Across China". Optimal production decisions depend on local market characteristics. This chapter develops a model to explain firm labour demand and firm density across regions. Firms vary in their technology to combine imperfectly substitutable worker types, and locate across regions with distinct distributions of workers and wages. Firm technologies which best match regional labour markets explain both productivity differences and firm density. Estimating structural model parameters is simple and relies on a two stage OLS procedure. The first stage estimates local market conditions using firm employment and regional data, while the second incorporates regional costs into production function estimation. The method is applied to Chinese manufacturing, population census and geographic data to estimate local market costs and production technologies. In line with the model, we find that labour markets which provide cost advantages explain substantial differences in firm productivity. Furthermore, regions which have lower optimal hiring costs attract more firms per capita. This is a joint work with Wenya Cheng and Dr John Morrow. The second chapter is called "Foreign Ownership Share and Property Rights: Evidence from Thai Manufacturing Firms". Existing work based on property-rights theories treat ownership as binary and the degree of integration as exogenous. This chapter proposes a property-rights model where the degree of integration is endogenised and treated as a continuous variable. The model makes two predictions

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for firm behaviour under vertical integration. Firstly, foreign ownership shares should increase with the significance of foreign investors' investment. Secondly, the effect of investors' investment on ownership increases with the elasticity of substitution across product varieties. Both predictions find considerable support in firm-level data from Thailand. The third chapter, "Product Quality and Intra-firm Trade", presents a partial equilibrium model with product quality differentiation where heterogeneous firms choose whether to vertically integrate their foreign suppliers or outsource input production. Quality is non-verifiable by third parties which causes the well-known hold-up problem. The severity of the problem increases with product quality. The model yields closed form expression for the productivity threshold that assigns firms into different ownership structures. The impact of quality related parameters on the threshold is analysed in detail.

Brazil is at crossroads, emerging slowly from a historic recession that was preceded by a huge economic boom. Reasons for the historic bust following a boom are manifold. Policy mistakes were an important contributory factor, and included the pursuit of countercyclical policies, introduced to deal with the effects of the global financial crisis, beyond the point where they were helpful. More fundamentally, it reflects longstanding structural weaknesses plaguing the economy, that also help explain Brazil's uninspiring growth performance over the past four decades.

This paper presents the results of a study of the determinants of research productivity in the pharmaceutical industry. Using disaggregated, internal firm data at the research program level from ten major pharmaceutical companies, we find no evidence of increasing returns to scale at either the firm or the research program level. However our results suggest that there are three benefits to running research programs within

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the context of larger and more diversified R & D efforts: economies of scale arising from sharing fixed costs; economies of scope arising from the opportunity to exploit knowledge across program boundaries within the firm; and the enhanced ability to absorb internal and external spillovers. We also find that spillovers between firms may play a major role in increasing research productivity. The paper also speaks directly to the question of firm heterogeneity. A significant proportion of the "firm effect" identified in previous studies can be explained by the slowly changing composition of the research portfolio, as well as by less easily measured aspects of innovative capability.

Master's Thesis from the year 2020 in the subject Economics - Other, grade: 1,0, University of Hagen

(Wirtschaftswissenschaft), language: English, abstract:

Economic theory suggests that offshoring creates productivity-enhancing effects but literature in this area has been rather limited for service offshoring until recently. Thus, the contribution at hand tries to provide an overview of why firms engage in service offshoring and examine how service offshoring affects productivity. The work is structured as follows: Section 2 first provides a definition of the related terms and narrows down the topic of the paper. Section 3 briefly discusses service offshoring as a new paradigm of trade in the US. It also addresses the types of offshored service jobs, the offshore locations as well as the current volume of service offshoring. Section 4 discusses the various determinants that facilitate service offshoring. Section 5 contains the core analysis of this paper with the goal of analyzing the productivity effects of service offshoring theoretically and empirically. First, a Heckscher-Ohlin model by Feenstra and Hanson (1996, 1997, 1999) will be introduced as one of the earliest models addressing offshoring and productivity. Then the "trade in tasks" model

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by Grossman and Rossi-Hansberg (2008) is presented to illustrate how service offshoring affects productivity. On an empirical level, the studies from Amiti and Wei (2009) and Schwörer (2013) will be discussed to address how service offshoring affects productivity specifically in the US and Europe. This will be followed by a comparison of the two empirical studies. Section 6 summarizes the work and adds some final remarks.

This note presents the results of an empirical analysis of firm-level productivity growth in Russia's manufacturing sector during the period 2003-08 using a rich Amadeus database as well as the recent EBRD/World Bank Business Enterprise and Performance surveys (BEEPs). The results show that productivity grew steadily between 2003 and 2008, with an annual growth rate averaging 4 percent over the period, showing no signs of a slowdown from the previous period after the 1998 crisis. Firm characteristics such as size, location, age, and the structure of firm ownership are important determinants of productivity, as evidenced by positive effects of scale economies (large firm effect), agglomeration (Moscow-city effect), private ownership, and a firm's industry dominance. Supplemental analysis of the quality of infrastructure-water, electricity, transport, and the internet-using BEEPS data show that infrastructure quality gaps reduce firm productivity with water supply gaps having the largest impact.

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