



Skills, Training Policies and Economic Performance: International Perspectives

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Main Messages

- Technological Change and Globalization is increasing the demand for a more educated and skilled workforce
- Both governments and the private sector will need to respond to improve education, and train and upgrade skills of the workforce
- The alternative -- growing mismatch of skills demand and supply, growing inequality of wages and employment opportunities of skilled/unskilled, loss of competitiveness
- Different training policy options exist, which ones are most appropriate depend on country conditions
- Importance of evaluating impacts of training policies to improve effectiveness of training programs and policies, and to design and implement reform

Overview of Presentation

3 Sections

I. **The Global Context**

- Technical change and globalization
- Implications for skills development, training policies

II. **Skills Development and Economic Performance**

- Firm-based training, determinants, and productivity impacts
- Technology adoption, links to skills and productivity

III. **Training Policies**

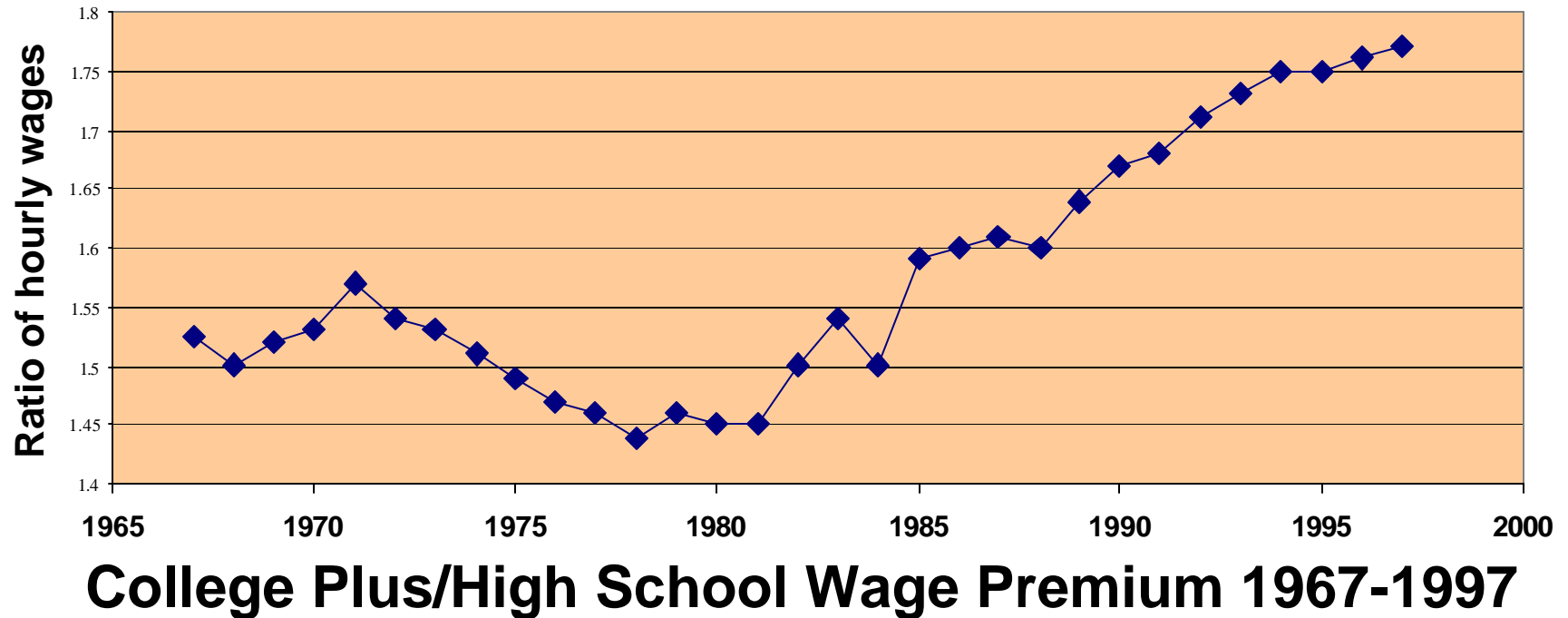
- Policy choices and reform of TVET systems
- Importance of impact evaluations

I. Global Context

- The links between skills (education and training) and national economic performance are widely accepted
- Growing market integration, technological change, FDI global flows, and industrial restructuring make skills development even more important
 - Wage differentials between skilled and unskilled workers have risen sharply in some regions over last 10-20 years
 - Growth of skilled jobs has also been more rapid than growth of unskilled jobs
 - Suggests demand for skilled labor increased faster than total labor demand, **and/or** skills demand increased faster than skills supply
 - Unskilled workers are increasingly more vulnerable to job loss, protracted unemployment spells, and declining real wages

Wage premiums to higher education have risen in the US in the past 15 years

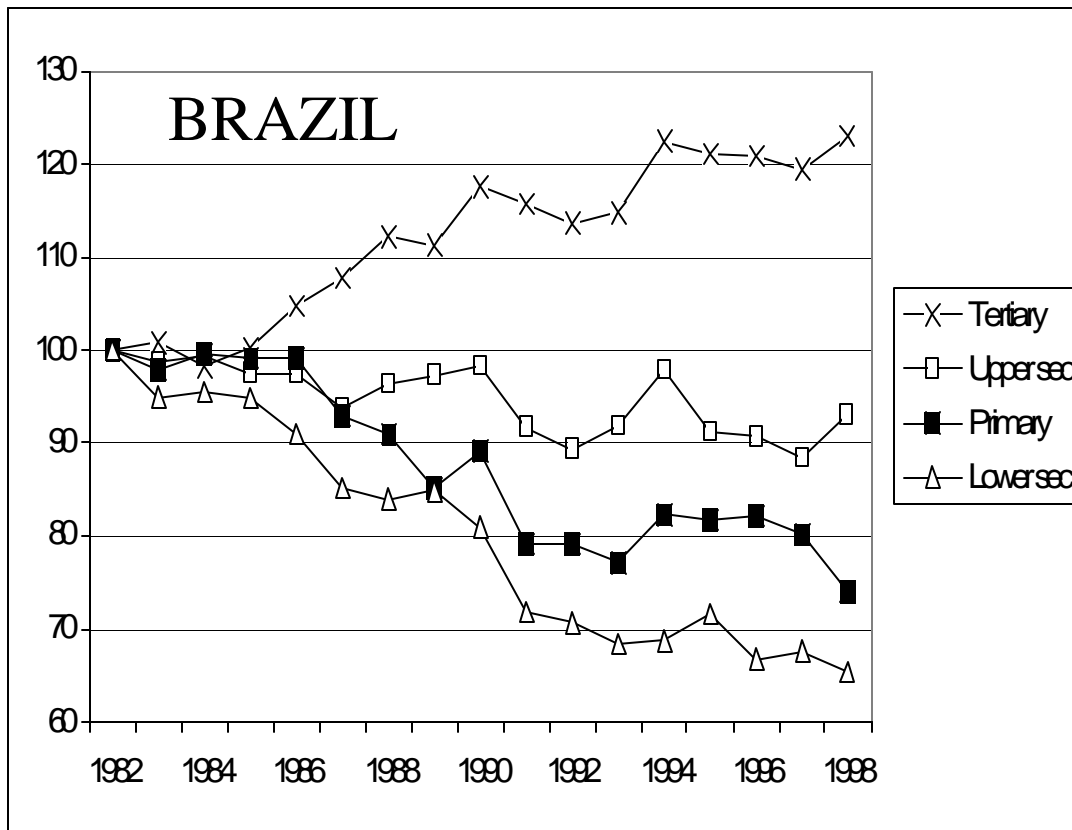
United States



Source: Murphy & Welch, Relative Wages in the 1990s, unpublished

As well as in some developing countries

For example, Brazil and Mexico

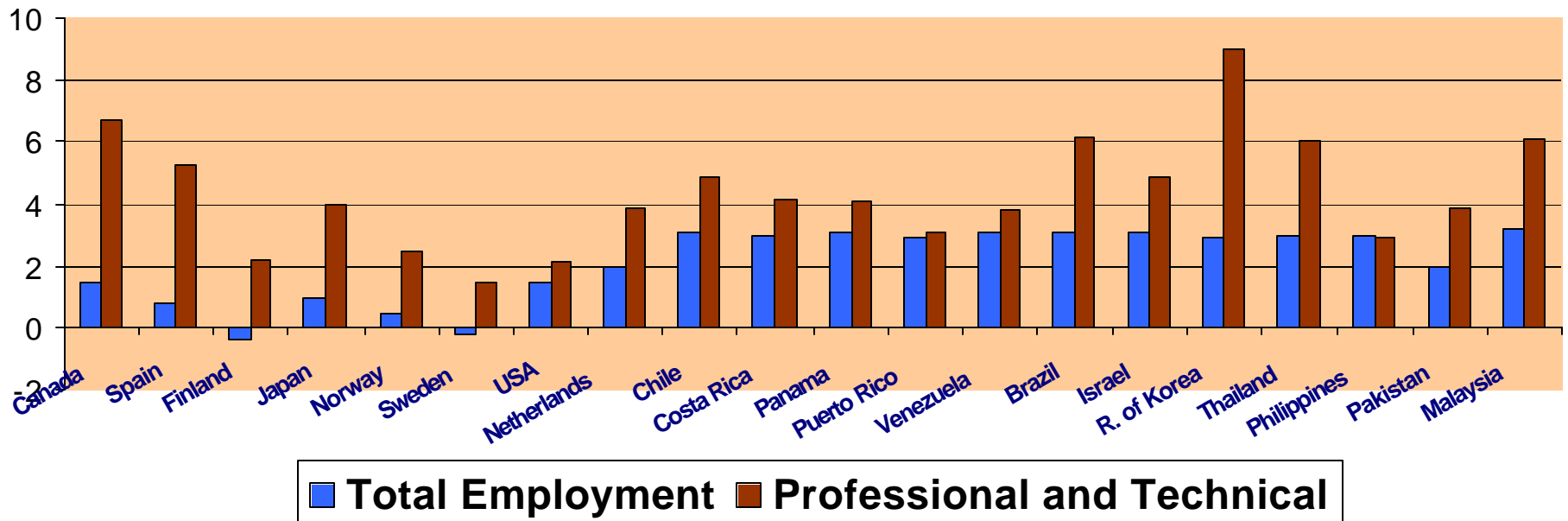


Similar changes over time seen in Mexico with returns to higher education rising and that to primary education falling -- Lachler (1998),

Source: Blom, Holm-Nielsen, and Verner, "Education, Earnings and Inequality in Brazil: 1982-1998" World Bank (2001)

Highly skilled occupations have also grown faster than less skilled

Annual Growth Rate of Employment in Selected Countries, 1981-1996 (in %)



Why has this happened?

- **Explanations:** globalization and trade, technological change, and capital-skill complementarity increase returns to skills and create demand for skilled workers
- **The International Evidence:**
 - Skill-biased technological change more important than trade liberalization
 - But trade facilitates imports of equipment—with technology complementary to skills—and can raise relative skills demand
- **Country-specific Factors:** also important
 - status and change over time in growth, economic system, trade regime, labor markets conditions, unions, labor regulation, education and training systems

Skill-Biased Technical Change

Berman and Machin (2000), “Skill-biased Technology Transfer: Evidence from Developing Countries”.

- Striking increase in skills demand in 1980-1990s in middle income countries, due to within-industry skills upgrading rather than restructuring from low to high-skill industries
- Same industries increasing skills as in high income countries in 1960s-1980s, ie. Suggesting transfer of skill-biased technology to developing countries
- No strong evidence of technology transfer to low income countries

The Case of Malaysia

Tan (2003) “The Skills Challenge of New Technology: Training and Productivity Growth in Malaysia”

- Rising trend in employment share of skilled workers (from 9% to 15% between 1977 to 1996)
- Use of new technology is biased towards use of skilled professionals, technicians and managers, but neutral or skill-replacing for less skilled groups
- Only highly skilled workers are responsible for adoption and use of new information technologies (ICT), resulting in higher productivity growth and wages especially when accompanied by training

What will happen to changing returns to skills?

- Whether returns to skills continue to rise, stabilize or fall will depend on demand shifts and skills supply response
- Shifts in demand – trade opening, industrial restructuring, technological change, type of technology adopted (labor using, or skill and capital intensive)
- Supply response – expansion of and reform to education and training institutions, and training policies directed at enterprises and individuals
- The next section looks at enterprise data to identify the incidence, constraints and determinants of training, as well as the wage and productivity impacts of training

II. Skills, Training and Economic Performance

Focus: In-service training -- which firms train, what factors shape their investments in skills and technology, what are their impacts on productivity, a a role for government?

Draws upon recent studies based on firm surveys:

- 1995 Enterprise Training in Developing Countries
- 1997 Malaysia: Enterprise Training & Productivity
- 1998 Malaysia: Inter-Firm Linkages & Technology Transfer
- 1999 Guatemala: Skills for Competitiveness
- 2000 Nicaragua: Enhancing Competitiveness through Skills
- 2001 World Business Environment Assessments
- 2003 In-Firm Training in Mexico
- 2003 In-Service Training and Productivity – Findings from Investment Climate Surveys

Training Questions in Firm Surveys

Training Module

- Invest in informal training? Formal training?
- Sources of formal training – in-house, external
- Who gets training, how much, what types?
- Use of government training programs and incentives
- If invest little in training, why? (List of constraints)

Other Questions

- Firm characteristics (employment, education, skills mix, wage structure, industry, ownership)
- Sales, production, exports, labor, capital, raw materials
- Technology (R&D, licensing, new technology)

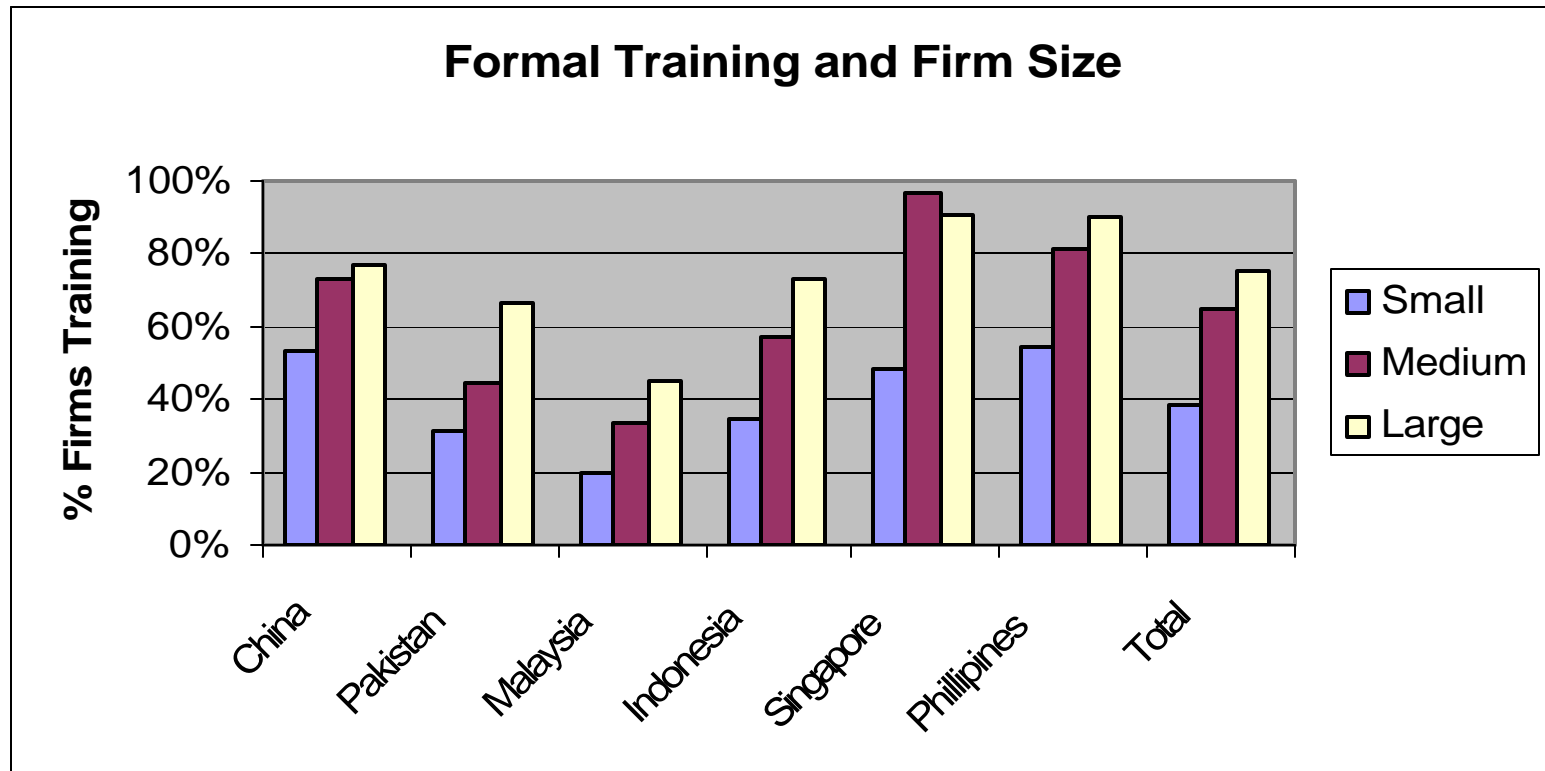


Enterprise Training

Overview of the Empirical Evidence - 1

- Incidence of training differs (broadly) by countries' development level and education/training system
- Within countries, uneven training incidence across firms -- higher among larger firms, multinational corporations (MNCs), export-oriented firms, and firms in high-tech sectors
- Educated workforce more likely to get training, as well as more training

Enterprise Training by Firm Size



- Across countries training increases with firm size, foreign ownership, export orientation, education of workforce
- Tendency for training to rise with country's income level

Overview of empirical evidence – 2

where firms get their training

In-House Training

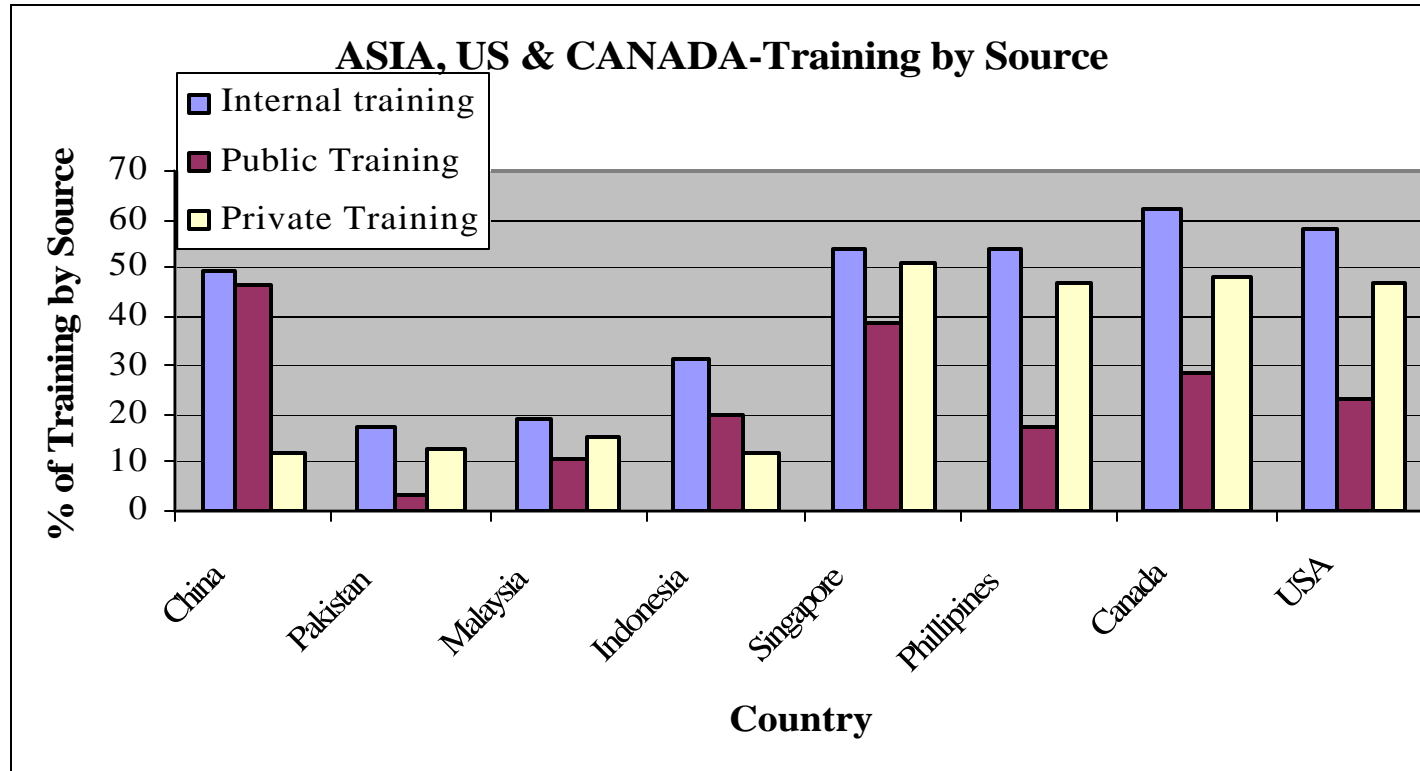
- Informal OJT from supervisors and co-workers
- Formal in-house programs

External Training Providers

- Public VET institutes
- Private training institutes
- Industry associations/industry-run centers
- Buyers and Equipment Suppliers
- Other Firms/partners

In-house programs, private schools, buyers and suppliers are often more important than public VET institutes as sources of training

Enterprise Training by Source



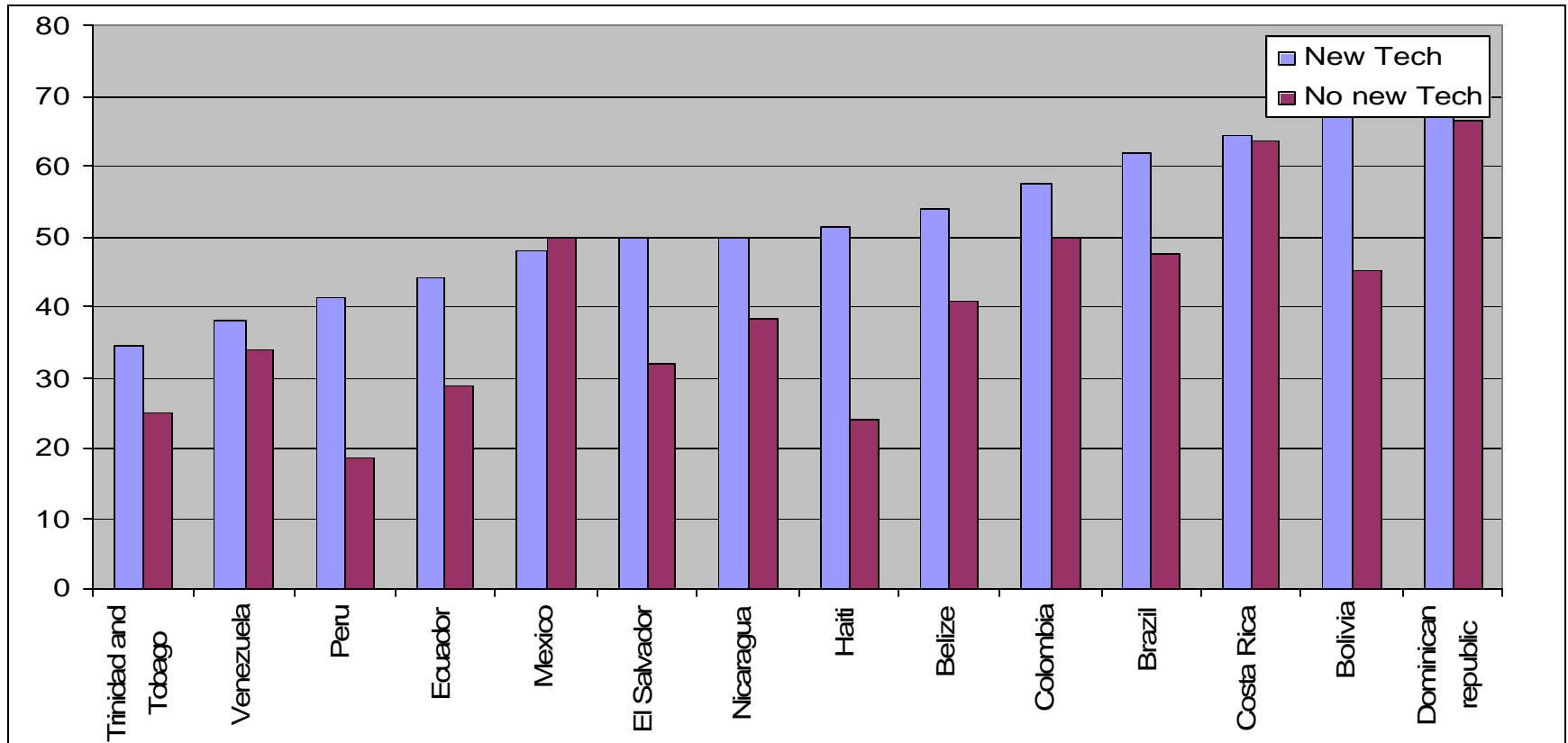
...Firms in most countries cite in-house training, private institutes and other firms as the most important sources of formal training
...Exceptions are China and Singapore where greater reliance on public training institutions

Overview of empirical evidence – 3 technology and trade

- **Technology-training complementarity**
 - new technology is more skill-using so technology adoption is accompanied by increased training
- **Exposure to International Markets**
 - exporting firms are more likely to train to meet exacting product and quality requirements of foreign buyers

New Technology Use and Training ... Complementary inputs

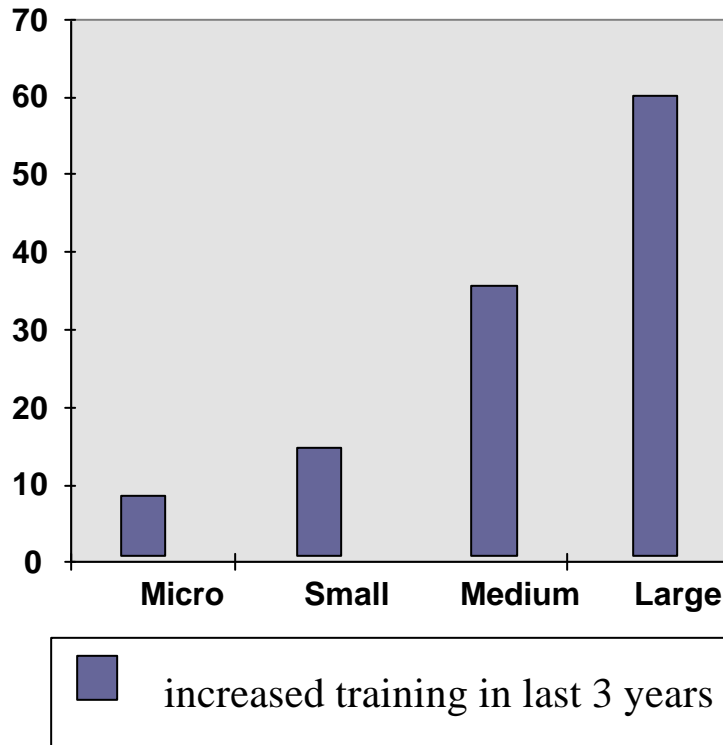
% increasing training



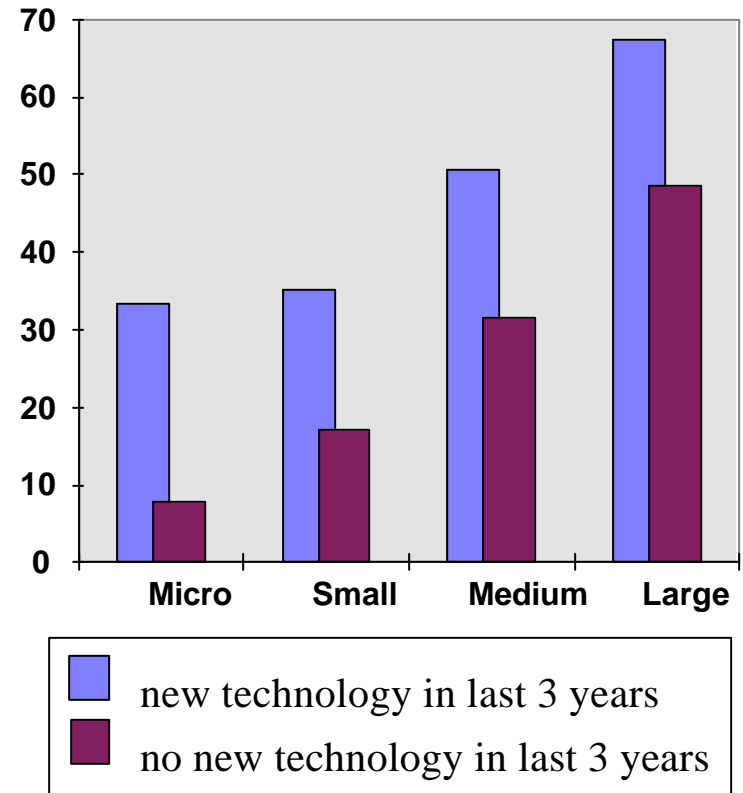
Firms that invested in new technology in the last 3 years also increased training over the same 3 year time frame...

Training and Technology by Firm Size

% increasing training



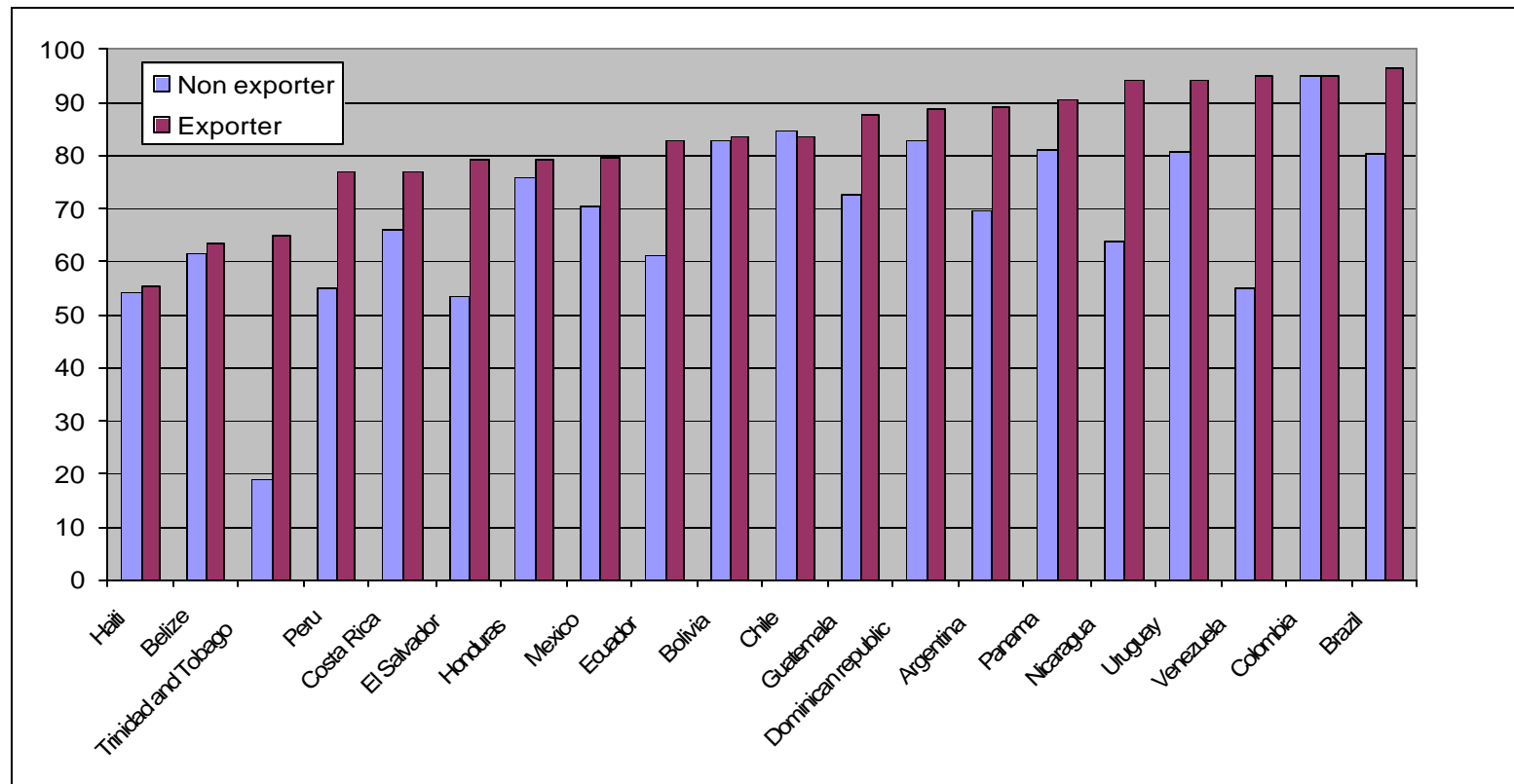
% increasing training by whether new technology



Malaysian Manufacturing 1997

Exposure to International Markets makes skills upgrading imperative

% employers providing training



In Latin America (and East Asia), exporting firms more likely to train. Training more likely when exporting to OECD markets.

Overview of Empirical Evidence - 4

Productivity Effects of Training

Productivity Impact Estimated Using a
Production Function Approach:

$$VA = a.K + b.L + c.Trn$$

VA = value added

K = capital assets

L = labor

Trn = indicator for in-firm training

c = productivity impact

Estimates of Training Impact

Country	Productivity Effects of Training (%)
Indonesia (1992)	71.1
Colombia (1992)	26.6
Malaysia (1994)	28.2
Mexico (1992)	44.4
Guatemala (1999)	49.0
Nicaragua (2000)	56.4

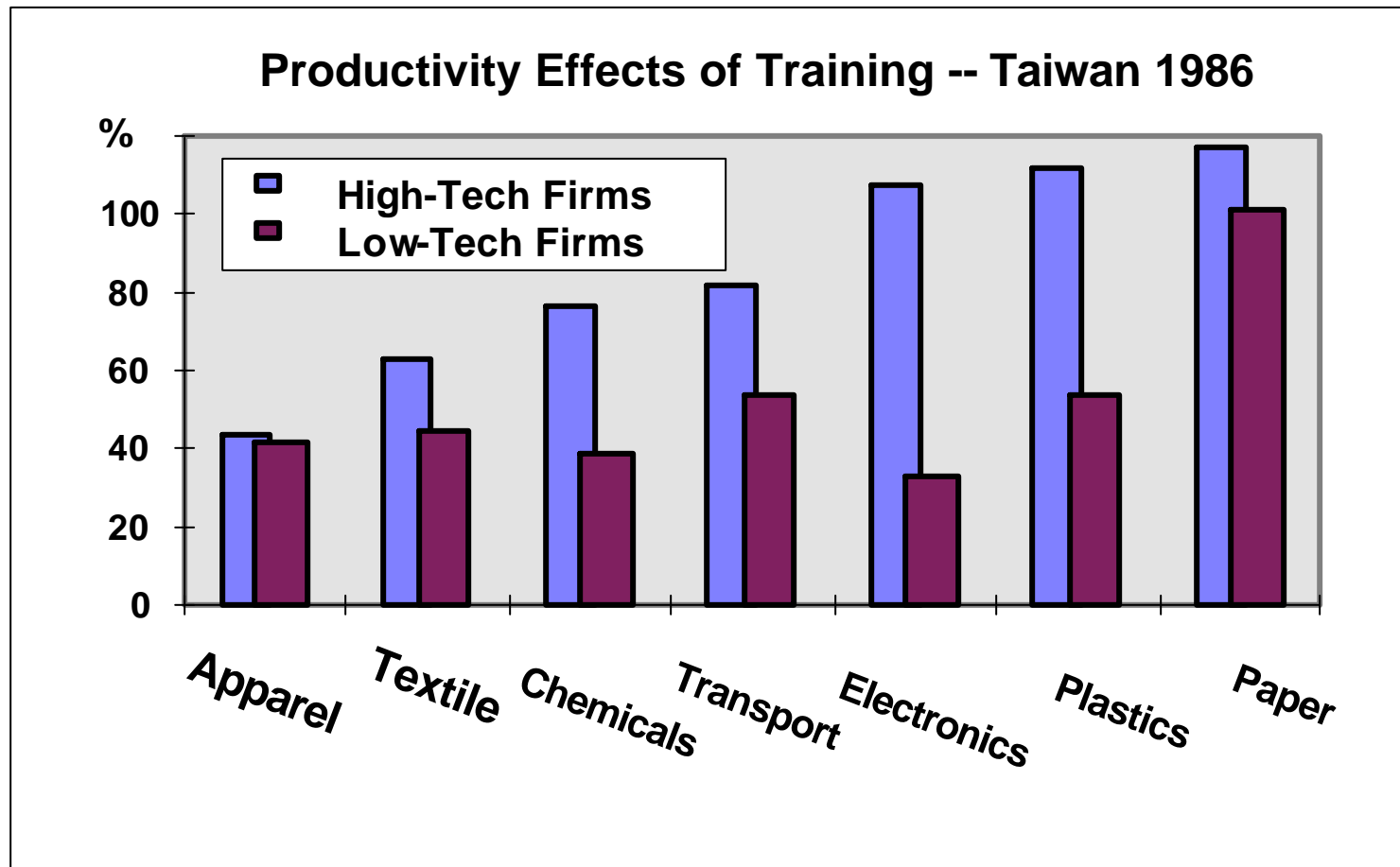
Source: Tan and Batra (1995); Batra (1999, 2000)

Estimates of Training Impact

Country	Productivity Effects of Training (%)	
	OLS	2-Stage
India (2000)	27.0	139
Pakistan (2002)	66.0	162
Bangladesh (2003)	not sig.	125
Morocco (2000)	48.0	156
China (2001)	32.0	107
Bolivia (2000)	34.0	132

Source: Tan, Savchenko and Pei (2003), “In-Service Training and Productivity: Results from Investment Climate Surveys”

Taiwan: Productivity Impact of Training Varies by Technology across/within Sectors



Panel Evidence Confirms Training Impacts on Productivity

- In Malaysia and Mexico panel studies, the productivity performance of firms tracked over time by training status
- Little lasting wage or productivity effects from one-off episodic training, but pronounced wage and productivity gains from repeated training and skills upgrading
- In Mexico, repeated training led to improvements in quartile position in TFP (total factor productivity) and wage positions over the 1993 to 1999 period.

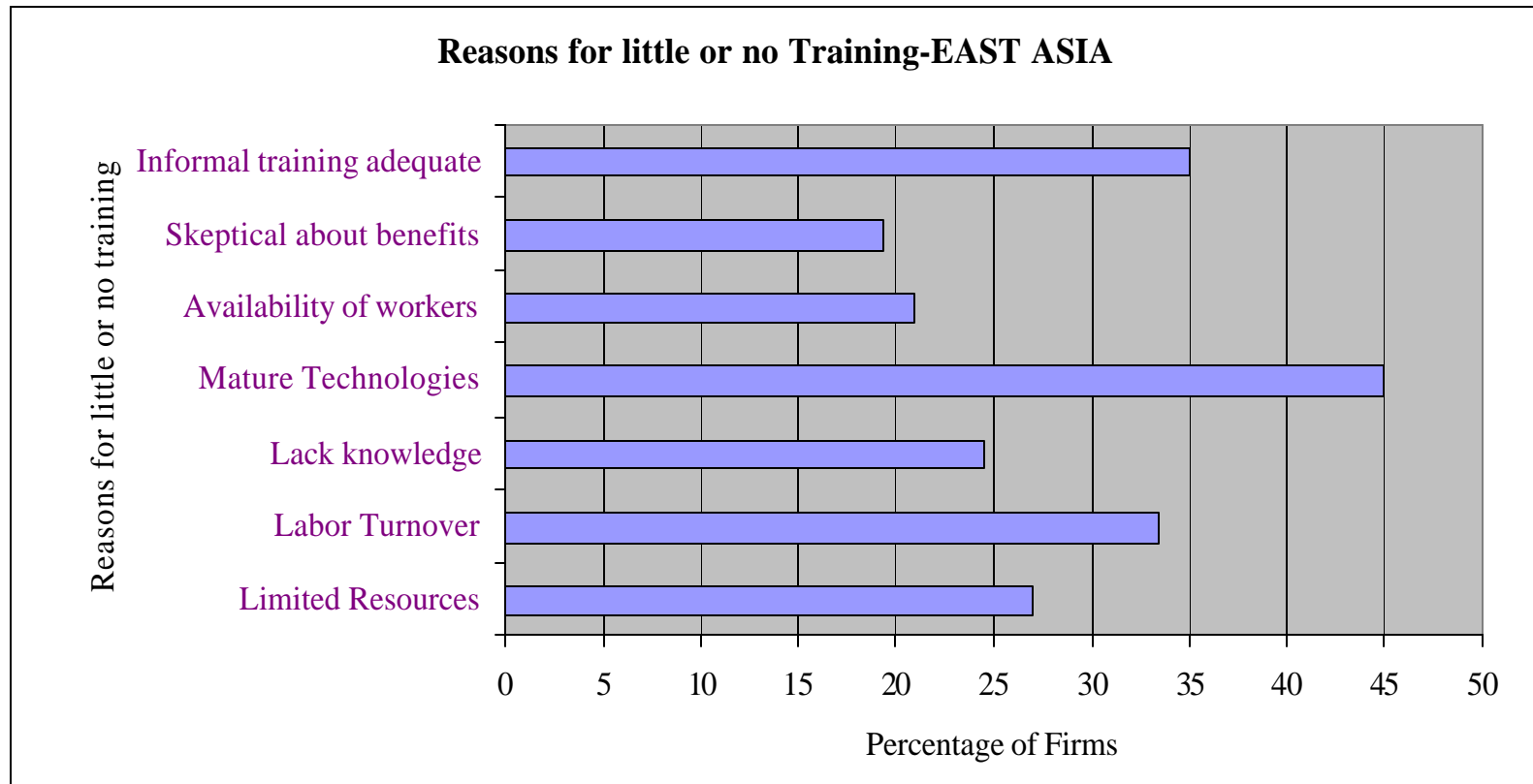
Sources: Tan (2000), “Malaysia: Skill Challenges of New Technology”,
Tan and Lopez-Acevedo (2003), “Mexico: In-Firm Training for the
Knowledge Economy”

So why don't more firms train?

Possible Explanations for Not Training

- low levels of education of the workforce (**lack capability to benefit from training**)
- limited resources for training (**poor access to finance**)
- imperfect knowledge about what or how to train (**imperfect information**)
- labor turnover, “poaching” of trained workers (**externalities from inability to recoup training investments**)
- mature technology requires little training (**no demand for training**)

Principal Constraints Identified by Firms East Asia Regional Average



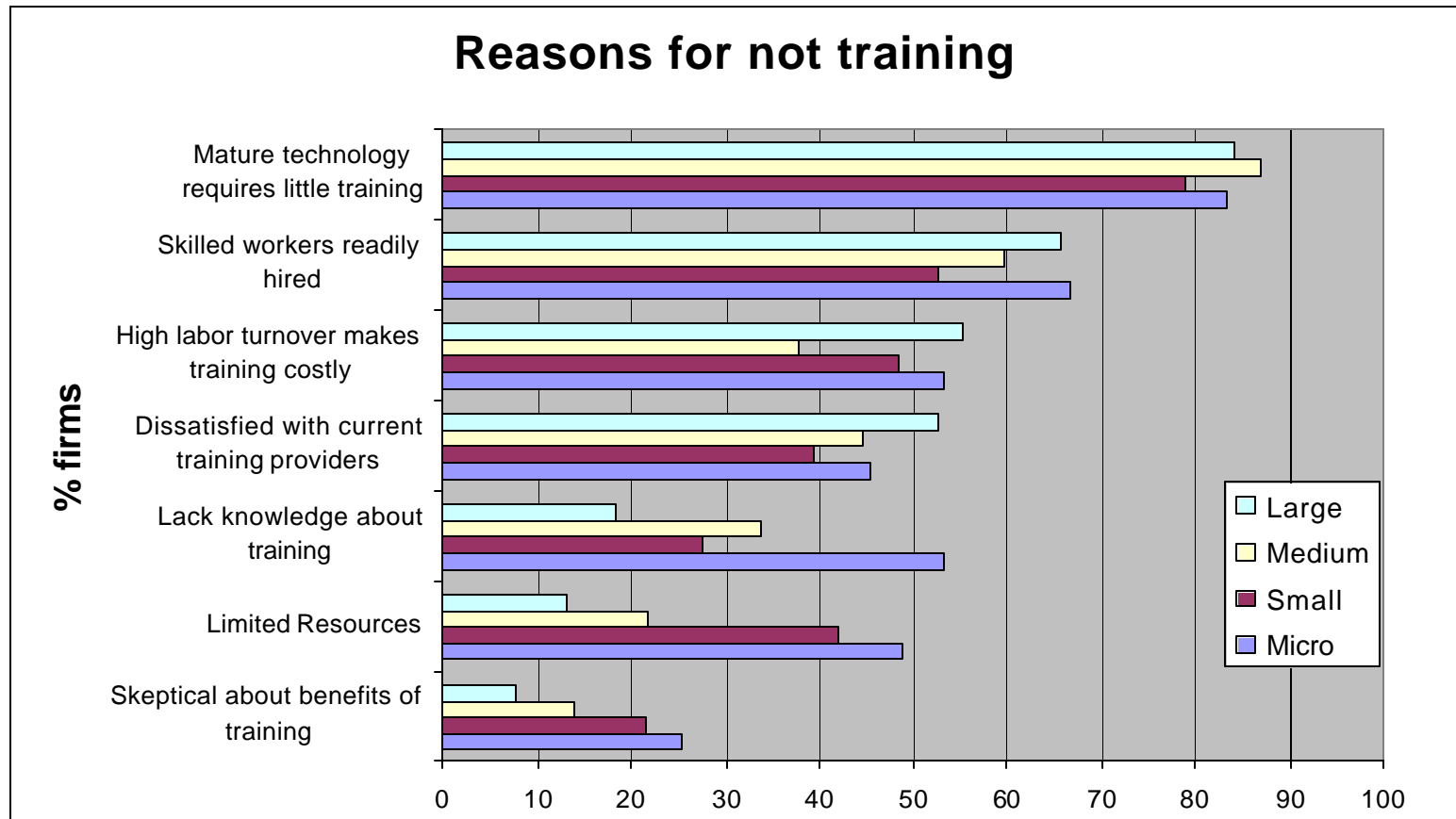
Use of mature technologies, informal training being adequate, high labor turnover and lack knowledge cited as key reasons for little or no training in East Asia.

Training Constraints Across Regions

- **Mature technology** among top 3 reasons for no training, for all firm sizes, formal or informal sector
- **In Asia**, labor turnover, lack knowledge of training also key training constraints
- **In Latin America**, skilled workers readily hired and high labor turnover ranked as key reasons
- **In Kenya and Indonesia**, funding for training, lack training know-how ranked among the top constraints
- **MSMEs** rank funding, lack knowledge of training, and skepticism of benefits as key constraints; not larger firms and MNCs

Firm Size Differences in Constraints

The case of Guatemala



...Major constraints to training for SMEs are (a) lack knowledge of training, (b) limited resources, (c) externalities from turnover of skilled workers, and (d) skepticism of benefits from training.

SUMMARY

1. Under-investment in training by enterprises, more so in lower income countries, and especially among MSMEs
2. Many enterprises do not train despite potentially large productivity gains from formal training
3. They rely on informal on-the-job training but no significant productivity impacts discernible from informal OJT
4. Most enterprises get little training from public VET, especially SMEs. Private training markets, including other firms, are important sources of training
5. Firms – especially SMEs – with low capabilities are usually weak in training as well as technology, marketing, quality

IMPLICATIONS FOR TRAINING POLICY

1. Important information failures, training externalities, and poorly developed capital markets warrant public policy intervention in training
2. Reform public VET institutions to improve quality and supply of training that match skill needs of enterprises
3. Foster and encourage development of private training markets able to supply appropriate training
4. More proactive training policies targeting SMEs most subject to information failures, poor access to funding, and weak training capabilities
5. Better coordination of training and technology policies, given links between skills and technology use

Useful References

- World Bank-International Labor (ILO) book (2000), Skills and Change: Constraints and Innovations in the Reform of Vocational Education and Training.
- World Bank book (2004), Vocational Skills Development in Sub-Saharan Africa, English and French, forthcoming
- <http://worldbank.org/labormarkets>