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HOW DO FIRMS LEARN?
- WITH CASE STUDIES FROM LAO PDR -

Peter de Valk

November 2003

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1 INTRODUCTION

This paper explores how manufacturing firms in less developed countries learn. It derives its evidence from case studies using open ended field interviews with a number of firms and from field experience as industrial policy advisor. The paper prefers the term ‘learning’ above that of the more common term ‘innovation’ because of its wider meaning (including that of innovation), which seems to be more appropriate to the actual experience of many firms in less-developed countries.¹ The scope of learning involves all stages in the value-added chain and even entrepreneurial functions of how to do business, how to manage and organize.

Theories of drivers for industrial development are concerned with the forces in the economic environment of the firm that provide the incentives for firms to learn and innovate (Porter 1990). These forces operate on the particular internal incentive orderings of the firms themselves (profits, market shares, share values, economic rents through oligopolistic technological innovation, etc.). These constitute questions of why firms learn. Indeed, an interesting line of future research would be to see to which extent the nature of learning is affected by firms’ incentives to learn. However, for now, the emphasis of this paper is on ‘how firms learn’, and while some case studies provide some clues as to why firms learn, the general assumption is that firms are trying to catch-up and grasp the opportunities at hand.

While some countries have experienced rather rapid industrialization, many other countries, particularly in Africa, but also in Asia, Eastern Europe, the Middle East, and Latin America are still struggling to expand their industrial sectors. Firms in those countries face tremendous difficulties arising from the national industrial environment as well as from their own limited organizational capability (Valk 1996).

Many programmes of assistance exist over a rather wide range in terms of scope, approach and instruments. Scope ranges from specific firm-level support to sectoral, regional and nation-wide programmes. The approach may address market failures with interventions designed from the perspective of a belief in overall market efficiency or it may be inspired by a more structural view of development constraints. The instruments may target labour, entrepreneurs, technology, exports, quality,

¹ Later in the paper, a well known distinction is introduced between exploitation (doing better what is already done) and exploration (doing new things). Learning includes both.

competitiveness, and information in almost any combination of the elements of this (incomplete and partially overlapping) list. Yet successes are few and failures many when measured by the ability to catch up in international competition.

The more recent approaches towards support policies for industrial development can be indicated by the catchwords ‘international competitiveness’, ‘global commodity chains’, ‘industrial districts’, ‘business development services’, ‘national innovation systems’, and ‘social capital’, with the first two generally referring to measures how to achieve international efficiency and the latter three more narrowly referring to business-support systems and institutions.²

Despite the fact that the research in these areas has highlighted the specific factors of success, policy prescriptions tended to ignore them and rather indiscriminately suggest copying success formulas from other countries.³ Although quite a few individual cases of success are reported and analysed, little systematic evaluation has been undertaken in an attempt to understand how these lessons would apply under different circumstances.⁴ This has led to rapid changes in fashion with donors and in the advisory community trying to establish clusters and networks of firms, supporting institutions and consultative mechanisms between government and private enterprise.⁵ What seems to be missing in particular is an understanding of how firms in slowly industrializing countries actually learn and how they interact with their learning environment.⁶

Therefore, this paper makes a start with exploring this issue in the context of less-developed countries. To this effect, an exploratory study has pursued this question with a small number of firms (nine) in Lao PDR and some of the industrial support organizations in Lao PDR. The choice of Laos as a case-study country was firstly its current low stage of industrialization, secondly its position in East Asia with

² The term social capital is also used in a much wider context of social, economic and political development.

³ Edquist (2001) underlines that ‘specific empirical analyses are absolutely necessary for the design of specific innovation policies’.

⁴ The recent Industrial Development Report 2002/2003 by UNIDO (2002) carries the title ‘Competing through innovation and learning’. Yet, this otherwise very interesting report spends very little time on discussing how firms in poorly developed economies actually learn. Only one contribution (Mathews 2001) discusses learning by firms in the fast industrializing countries of East Asia and the relation with the national innovation system typical to those countries.

⁵ Somehow, organized (and non-organized) labour, important actors in industrial district analysis, has missed the boat in most of this advice.

⁶ Economists (and I am one) can learn a lot from the field of business and organizational studies, areas that are largely ignored in economics.

borders with fast moving countries such as China, Vietnam, and Thailand and slower moving countries such as Cambodia and Myanmar, and, last but not least, the research access provided in Lao PDR by cooperation with UNIDO and the Ministry of Industry and Handicrafts of the Government of Lao PDR.⁷

The paper begins by elaborating the research question using existing literature and own experience and analysis. Most of this literature is geared towards developed countries focussing on innovation and technological change. Institutions, organizations and policies for innovation are analysed in the National Innovation System Approach (Edquist 1997, UNIDO 2002). Within this approach only recently attention has been given to how firms learn in developing countries (mainly focussing in East Asian successes) and related innovation *and learning* systems, called national systems of economic learning (Mathews 2001). Even here, learning is restricted to learning of technology, which for many early starters is only part of the problem. In the same vein, the technological capability literature addresses technological learning in developing countries at firm, sectoral and national level (Lall 2001).⁸

The existing literature in the field of organizational learning provides broad and generic insights into the question of how firms learn. The most appropriate models are based on the resource, capabilities or competence view of the firm (Penrose 1981). Some models, in the tradition of the resource based view of the firm, see corporate culture as one of the most important resources and argue that the core function of a firm is to motivate and coordinate its employees through its corporate culture. This determines the effectiveness of the learning environment. Transaction costs models, explaining what is done inside the firm (including training and research) and what is left to the market or, more generally, to the general environment, add some understanding too.

Another branch of literature introduces the concept of national business systems, a wider concept than innovation systems, explaining ‘brands of capitalism’ and discussing the institutions that shape the operations (the way they do business and the activities and sectors in which countries excel) of enterprises in general. In

⁷ The empirical work done for this paper was developed and financed as an explicit research undertaking, e.g. not as part of a consultancy assignment.

⁸ See Lall (1998) for a discussion of technological capability in emerging Asian countries.

essence, this concept closely resembles the notion of ‘social capital’ when restricted to the business sector.

After this theoretical elaboration in section 2, section 3 provides an overview of the relevant national context for manufacturing in Laos.

Case studies of nine firms are presented and the relevant organizations in the national innovation and learning system are summarized. The manner in which these cases are reported is the outcome of two stages. In the first stage, the open-ended interviews have been worked out and described without the use of theoretical concepts other than those involved in the questions and answers themselves.⁹ The second stage of reporting explicitly uses the theoretical introduction to this paper as source of analysis and highlights incidences where the cases show up interesting links with the theoretical treatment (section 4.1). This is followed by a short section, drawing out some of the interesting findings (section 4.2). This particular method of case study writing is called here ‘theoretically informed reporting’.

Using an inductive approach, given the small number of firms and the exploratory character of the research, section 5.1 will discuss the relation between the findings on learning of firms in section 4 and the theoretical discussion in section 2. The next section (5.2) draws preliminary conclusions on the nature of support that government would be able to provide. Finally, the last section (5.3) elaborates areas for further research.

2 INNOVATION AND LEARNING IN MANUFACTURING FIRMS

2.1 Theories of Learning by Firms

‘How firms learn’ is a tricky question. Three problems are embedded in this question related to each significant word: learning, how and firms. These are two problems of meaning (learning and firms) and one of complexity. The first one is the metaphorical problem when applying human concepts to an organization. Even for an individual the question ‘what is learning?’ raises a large number of other questions. But organizations are not humans. Anthropomorphic answers will not do (Argyris and Schön 1978). The search is for meaningful organizational concepts.

⁹ Not included here but available from the author: valk@iss.nl

The next problem (the ‘how?’) arises when taking into account that learning is a relationship between an environment and an actor. The variety of potential positive and negative influential factors and related learning processes create a rather complex context. Learning might even be a joint activity of the firm with elements in the environment.

Third is a problem of essentialism: what is a firm? Literature abounds with different views each emphasizing different aspects. Moreover, firms differ in terms of resources, core competences, size, linkages, sectors and management culture providing further possibilities for differentiation. An eclectic approach will prove most useful.

2.1.1 From human learning to organizational learning

Learning is essentially a human activity and applying the concept of learning to an organization automatically means that it is used as a metaphor. A firm behaves as if it learns. When applying metaphors that intuitively make sense there must be elements in the two objects that at some level of abstraction are very similar if not the same. In this case is it thus necessary to formulate elements of learning that can be used at the level of organizations. For the current purpose, learning can be understood to involve processing new and old information that leads to new knowledge for the actor involved.¹⁰ This leads to the question: what is knowledge for a firm? To answer that question, human learning and knowledge must be understood first. This is so for two reasons. Firstly part of the learning in organizations is human learning leading to individual knowledge, whereas secondly, organizational learning and knowledge will have to derive their meaning by comparison with its human equivalents.

Human learning involves an environment, part of which forms the object of knowledge and part of which is the channel of knowledge (parents, schools, export promotion agencies, etc.). Information flows from the environment into the human cognitive system where it is retained and leads to changes in cognition itself and action (there is thus a difference between more information, e.g. without changes in the cognitive system, and new knowledge, with cognitive changes).

¹⁰ ‘Producing’ information (in addition to ‘processing’) introduces a dynamic element into the concept of learning by organizations (Nonaka 1994).

This cognitive system has a physical dimension in terms of memory and storage and a conceptual dimension in terms of processes and categories of understanding. The categories of understanding employ 'scripts' of past events to fit and understand new experiences, in the process adding to and changing the scripts as required. Nooteboom (2000b) uses these notions as a bridge to move from an individual to an organization. In addition, and thereby adding a third element, the specifics of the environment provide for different learning processes in terms of sources, content and opportunities. Can these concepts be given a meaning in the context of firms? In particular, what does it mean that a firm knows something? How, why and when does a firm increase its knowledge? This requires a discussion of the third problem 'what is a firm?'

2.1.2 *What is a firm?*

What constitutes the essentials of a firm is a highly debated question. Yet firms make profits (accounting view), they can be visited (physical view), they produce output using equipment and labour, buy and sell in the market (economic view), they can appear in court and are a legal entity (legal view).

The mainstream model of the firm is the Transaction Costs Theory of the firm, emphasizing that firms exist to minimize transaction costs in economic exchange (Williamson 1989). Firms exist because the market cannot coordinate or can only coordinate at higher costs (to the entrepreneur). This theory uses the notion of specific investments to explain the use of different instruments of coordination and control in a situation that otherwise would result in dependency. The main instrument to avoid this one-sided dependency are contracts, hence the description of a firm as a nexus of contracts. Other possible instruments are the creation of mutual dependence, distribution of ownership, reliance on the value of reputation and use of hostages (creating the reciprocal situation), each with their own advantages and disadvantages depending on the situation. For example, when training its employees, the firm can only benefit from its investment when the employees stay long enough in the firm to recover the costs. Yet the employees have become more attractive to other firms. Contracts are the outcome, binding labour over a period after their training. However, when the training is very specific to the firm, a mutual dependence has been created, particularly when also the trainees have to spend resources on the training. In the

absence of these possibilities, training may not take place, or only with trusted persons such as family members.

While useful to understand why some activities are left to the market and others take place within the firm, the model is not well suited for understanding dynamic processes of organizational change and learning, because of its emphasis on the static problem of minimizing transaction costs.

A more useful starting point for understanding learning is the Resource-based View of the Firm (Nanda 1996, Penrose 1981). Specific resources, built-up and continuously modified and expanded by the firm over time, explain the competitive advantage of firms. In Nanda's words: 'The resource perspective views firms as learning organizations, improving their capabilities through experience' (Nanda 1996). Essentially, a firm is seen as a learning system, through which it is able to create and maintain specific competitive advantages that cannot be found in the market.

The notion of 'path dependence' is introduced to explain why firms have different competitive advantages and are able to sustain those differences. As a result, the resources and competences specific to the firm and the way in which the firm has acquired them are typified as 'idiosyncratic'. A firm, therefore, is continuously trying to create a 'local and temporal' monopoly from which it derives economic rent, while the rest of the competing firms are trying to catch up with it, driving down the opportunities for economic rent.¹¹ The resource-based view of the firm tries to explain how the firm does this.

Given its emphasis, this view has spurred research into learning and competence building processes, in the first place internal to the firm, but also in relation to its environment. The focus is on distinguishing particular resources and competences and on how these are acquired over time through organizational learning processes.

A distinction is made between:

- Resources available to firms, which are the human and physical assets;

¹¹ The trend towards zero economic rent is over-emphasized in the neoclassical theory of the firm focussing on static cost minimization at the expense of insights into the real working of firms. In its more interesting expansion dealing with oligopolies, the Theory of Industrial Organization focuses on strategic behaviour of firms towards rivals. Innovation and learning are but one of the instruments of strategic behaviour and their internal organizational processes are not explicitly studied in this theoretical context.

- Capabilities of the firm, which are defined by the available assets and the way they are organized by what are called first order routines (practices) of the organization;
- Competences, which are the abilities of a firm (also called 'higher order routines') to develop and configure organizational resources; and
- Strategic resources, which define those resources that constitute the competitive advantage of firms from where they derive their economic rents.¹²

Thus, learning can be defined as the activities undertaken by a firm in acquiring competences. There are many such activities. Some are directly aiming at increasing competences. Some have this as a more indirect effect, while for others increasing competences is a necessary condition for the success of the activity (acquiring more complex equipment). For most competence enhancing activities, specific competence is explicitly applied to obtain more competence of the same or a different nature.

Clearly falling within the resource-based view of the firm, Andreu and Ciborra (1996) develop a detailed model of organizational learning for developing organizational core-capabilities differentiating between learning for static efficiency (capability learning) and learning for dynamic efficiency (strategic learning). The learning dimension is spanned over resources (at the beginning) via work practices and capabilities to core competences at the top. Routinisation learning takes place in the interaction between resources and work practices; capability learning between work practices and capabilities, and strategic learning between capabilities and core-abilities/competence. The perspective of the analysis is in terms of processes of exploiting existing resources rather than processes of exploration for acquiring new knowledge (i.e. innovation). However, dynamic learning involves changing core-competences and related resources and this will constitute innovation for the firm. Perhaps because of the resource-based perspective, no attention is given to the different organizational characteristics required for these processes.

Nooteboom takes the discussion a step further by distinguishing learning in processes of exploitation (achieving efficiency using available resources and

¹² These definitions beg the question whether first and second order routines belong to the competences of the organization, thus leading to a circularity.

knowledge) from learning in exploration (innovation and learning).¹³ For optimal exploitation employees will have to cooperate and understand each other. This is a setting whereby the ‘cognitive distance’ should be small. Employees will all have a certain degree of cognitive distance relative to each other. The ability to overcoming this distance is called ‘absorptive capacity’, where (simply speaking) more of one needs to be accompanied by more of the other to be able to learn and communicate meaningfully. An important role of the entrepreneur in the firm is to get the best out of this situation by motivational coordination, creating a corporate culture of using one’s absorptive capacity to its maximum to gain from the cognitive distances of colleagues, all within the framework of the firms own objectives and competitive competences.

Indeed for Nooteboom (2000a) this is the most crucial task for the entrepreneur and gives a more fundamental and dynamic explanation why firms exist than the more static explanation of transaction cost theory. In this view then, the firm is seen as primarily and fundamentally a motivational focussing device.

However, without cognitive distance there is little to learn and with too much distance the absorptive capacity may not be sufficient. These concepts are useful for both the interaction with the objects of learning as well as the social interaction with others.

Nonaka (1994) emphasizes that knowledge can only be created by individuals. Knowledge can be analysed along two dimensions. The epistemological dimension to the extent that knowledge is tacit or explicit and the ontological dimension in the sense that knowledge is created in social interaction. This is the case at a very fundamental level when individuals mature and gain deeper understanding in a process that has been described by Shanon (1993) as scaffolding.¹⁴ It also occurs at the more practical level of organized learning processes. Thus, the organization provides the context and ‘organizational knowledge creation, therefore, should be understood in terms of a process that “organizationally” amplifies the knowledge created by individuals, and crystallizes it as part of the knowledge net-work of the organization’ (Nonaka 1994). One can argue that, given a situation with bounded rationality and asymmetric information, the social interaction within a firm also

¹³ These concepts were earlier introduced by Dosi and Marengo (1992), quoted in Nanda (1996).

¹⁴ As discussed in Nooteboom (2000b).

selects and concentrates knowledge. This gives rise to ‘satisficing’ solutions and provides room for different firms to come up with their own idiosyncratic approaches.

Taking this one step further, for understanding learning and innovation by firms it is thus necessary to investigate how and to what extent firms achieve this social interaction. The interaction can refer to processes inside the firm and processes transgressing firm’s boundaries. The latter takes the discussion naturally into issues relating to the firm’s social and institutional learning environment.¹⁵ Some firms deliberately stimulate interaction of their personnel with their environment, others even influence the environment to better suit their own purpose, and again others are more passive consumers of what the environment has to offer.

For Nooteboom (2000b) the amplification of knowledge is facilitated by organizational scripts within which the individual activities and cognitions are fitted. These scripts constitute the absorptive capacity of the firm, the format in which the firm interprets, understands and filters information. These scripts are part of the corporate culture. The concept of ‘scripts’ is borrowed from the theory of human learning and constitutes an elaboration of the concept of ‘routines’ of the evolutionary model of the firm (Nelson and Winter 1982).¹⁶

Organizational learning is the change in organizational scripts. First order learning entails greater efficiency of substitution of information into scripts, second order learning entails changes in script architecture, in processes of exploration.¹⁷ A third level would be the level of meta-learning: learning how to learn. Argyris and Schön (1978) call this deutero-learning. The relatively recent field of knowledge management focuses on the latter as an explicit strategy available to organizations (Sanchez 2001).¹⁸

Referring to the question formulated in the first paragraph of section 2.1, it is at this level of abstraction (of scripts) that individual and organizational learning can

¹⁵ To be distinguished from the physical environment and the actual content of their learning and innovation processes.

¹⁶ And, by referring to models of human learning, ‘scripts’ are to be preferred above the ‘genes’ of the evolutionary model. Organizational scripts can influence individual scripts and thereby achieve cognitive focussing. Genes cannot have that interpretation.

¹⁷ This loosely corresponds with the notions of single and double loop learning developed by Argyris and Schön (1978).

¹⁸ Mathews (2001) discussed below is an example of meta-learning in the context of newly industrializing countries. The article itself is a form of meta-learning but also its content focuses on ‘national learning management’ (my own words). Other examples are studies on learning and innovation systems, some of which are discussed below.

be compared without falling in the trap of anthropomorphism. However, differences remain. Where scripts in individuals can be understood as internalised action, scripts in organizations are designed to lead to action: they are ways of doing things.

The role of the entrepreneur and managers can now be described as follows: (a) with regard to exploitation as: creating cognitive proximity (in the firms, the unit) to learn existing practices better, leading to efficiency, and (b) with regard to exploration as: bridging the cognitive distance between firms, and between the firm/managers and the environment. Thus, social interaction will be different for processes within the firm and for processes linking the firm with its environment. Learning from the environment involves social interaction with actors and institutions outside the firm. The entrepreneur and managers will have to bridge a wider cognitive distance in order to learn something, thereby more intensively relying on absorptive capacity.

So far no special attention has been paid to differences that may arise from the particular economic environment that firms in different countries face. This is covered by the literature on business systems (discussed in section 2.2.2). Mathews (2001) takes a first step in that direction (focussing on developing countries), with the presentation of the Developmental Resource Leverage Model.

This model aims to explain the catching-up of successful East Asian firms, showing that firms and governments apply search processes to learn rather than innovate. This involves a mixture of exploitation and exploration: exploring for better exploitation.

According to Mathews (2001), the learning problem in the context of developing countries can be described in terms of a general sequence. This sequence, which is followed by all high technology industries successfully created in East Asia, is as follows:

- Step 1: Preparing the ground – ensuring that skills, knowledge, contacts, companies are all in place.
- Step 2: Seeding/implantation – technology acquisition and resource leverage, leading to adaptation and development.
- Step 3: Propagation – financial resources, enterprise development, product development, and infrastructure support to encourage firms to take up the new technologies
- Step 4: Sustainability – deepening industry structures, R&D capabilities, and social structures of innovation.

These steps are seen as a recursive process whereby, with state assistance, firms use existing competence to move to higher and new competence, as conditioned by their absorptive capacity in terms of management abilities and technological mastery. Hobday (1995) showed for high-tech firms in South-East Asia that moving towards higher levels of competence also involved increasing degrees of ownership of the production process by moving from Original Equipment Manufacturing (OEM), to Own Design and Manufacture (ODM) and finally to Own Brand Manufacture (OBM) much like the process described by Wortzel and Wortzel (1981).

A specific mixture of qualities in terms of cognitive distance and absorptive capacity is required for such processes. Because of the difficulties for individual firms in bridging the cognitive distance, state organizations play a substantial role in all these steps, in all successfully industrializing East Asian countries.

In contrast, different private sector constellations have been used in different countries: (a) large already established firms in the industrially upgrading country (e.g. South Korea), (b) public sector laboratories and institutions, linked to consortia of small firms (e.g. Taiwan), and (c) external leverage via multinational corporations (e.g. Singapore).

However, the applicability of the model to countries such as Laos is limited since it assumes that the learning trajectories for firms in step 1 are assumed to have been completed and the attention of the model is concentrating on the last three steps. For countries such as Laos however, the first step is the problem.

Yet, the model makes a contribution by underlining that the nature of learning is characterized by catching-up rather than innovation and that this catching-up learning process is not an activity of the firm by itself but that it involves the whole economy, including the state. These combined activities of state and firms in this learning process are called the National System of Economic Learning (see also section 2.2). Therefore, the next section will elaborate on the environment of the firm in relation to its learning processes.

2.2 The Learning Environment: Social Capital, Business Systems, and Learning and Innovation Systems, Human Capital

Individual firms and sectors do not function in isolation, as hypothesized in much traditional economic literature, with its emphasis on capital and labour. More recent economic approaches have developed concepts such as human capital and institutional economics has added (amongst other contributions) principal-agent models to the understanding of the working of a firm.

Various approaches complement this individualistic notion of the firm. This section discusses the three related fields of social capital, business systems, and learning and innovation systems. Whereas in the literature on innovation, business systems, social capital and innovation systems are all given attention, the literature on social capital is rather silent on the other two, although some cross-fertilization is currently taking place (Nooteboom 2000a, World Bank 2002, UNIDO 2002, Lall 2002).

2.2.1 Social Capital

In broad terms, social capital can be defined as the set of institutions required for a society to function, prosper and grow. More narrowly defined, it refers to the institutions that allow individuals to cooperate. Institutions are the set of common values that govern behaviour between people and groups of people. Social capital is therefore a subset of institutions and it involves notions of trust and common purpose.

The use of the word capital implies something that has taken time to build and has 'positive effects' over a period of time in the future. In this sense it refers to a social asset rather than a social liability. One criticism is indeed that the concrete manifestations of social capital can also be a social liability, depending on the circumstances. Examples of social capital are notions of what constitutes normal behaviour, trust and other codes of engaging in social interaction and of doing business.

Social capital reflects collective learning: the slow endogenous process of building or changing and adapting of common values. External environmental factors do play an important role as catalysts for change. Examples are changes in the political system towards a multiparty democracy, the process of economic liberalization, transition from a command driven economic and social system to a

more market based system, and the transformation of traditional society under influence of forces of modernization.

A different definition, specifically alluding to organizations or ‘corporate social capital’, is ‘the set of resources, tangible or virtual, that accrue to an organization through social structure, facilitating the attainment of goals’ (Leenders and Gabbay 1999). When social structure is taken to include the field of cognition, social corporate capital also refers to the knowledge and competence that are exchanged, shared and created between firms with different capabilities and absorptive capacities (Cohen and Levinthal 1990).

When focussing on the enterprise sector, social capital has its counterpart in the notion of business systems.

2.2.2 *Business Systems*

Business systems are understood as economic coordination and control systems that organize economic activities (Whitley 2000). These coordination and control systems will differ according to the specific institutional context, and will result in different approaches to developing and managing innovations and (adding this for the sake of the present purpose) learning activities.

Table 1 summarizes how six different business systems differ in terms of their mechanisms of control and coordination, their institutional features, and characteristics of firms that are likely to develop under such business system.

The fragmented business system is typical for countries in their early stage of industrial development; The co-ordinated industrial district is a regional system of which the most successful ones are found in developed countries and countries that have made considerable progress in industrial development (at least in some regions).

The next three systems are ‘different brands of capitalism’, with the compartmentalized system the archetype of Anglo-Saxon system, the collaborative business system that of Germany and perhaps Holland, and the highly coordinated business system that of Japan.¹⁹ This has an interesting implication for the conceptualisation of social capital: different forms of social capital must be distinguished. It is therefore not a simple issue of the more social capital the better.

¹⁹ This will have an interesting implication later on when the related concept of social capital is discussed.

The final category, the state organized business system, is represented by post-1961 South Korea and to some extent by France.

If the fragmented system is interpreted as a temporary form that will evolve into one of the others in due time it can also be characterised as an underdeveloped form of capitalism. Thus, despite the common dimensions on which these systems are compared (control, coordination, institutional features and characteristics of firms) these business systems are really different entities. It will be quite difficult, if not impossible, to forecast into which type of developed system the fragmented system will evolve.²⁰ In the same vein, adopting concrete institutions and organizations (in the national innovation and learning system) may, beyond a certain point, not be what is really required at the particular historical stage of development of a fragmented system.

A priori, for developing countries such as Laos, the fragmented business system seems to be the applicable choice implying the predominance of opportunistic firms with low contribution of skilled workers to firm's organizational capabilities. As argued by Whitley (2000), the most related form of innovation strategy for such business systems is the dependent strategy, characterised by inconsistent state science and technology policy, weak public training system and weak intermediary associations.

Yet given the system of state control in Laos (in the form of a strong communist party), the state organized system might be argued to have some relevance. However, the innovation and learning strategy would require a strong, mission-oriented state, which in transitional countries with poor economic development will most likely be absent.

Finally, given its popularity within the development community as a tool for industrial development (appropriate or not), the coordinated industrial district will form an interesting reference case. In the (by now) traditional analysis of industrial

²⁰ In quite a few countries, the fragmented system appears to have established itself in a rather permanent form (depending of course on what time horizon one chooses and on the degree of pessimism one might entertain).

districts, the industrial district is characterized by non-market co-ordination between economic agents, collective action processes through groups and networks, and the role of local and non-local institutions (Torre and Gilly 2000). The learning and innovation strategy is craft-based and flexible, with strong participation of skilled workers and a supportive local institutional environment in terms of financial and government agencies.

TABLE 1
Types of Business System, Institutional Features and Firm Characteristics

	Business System Type					
	Fragmented	Coordinated Industrial District	Compartmentalized	Collaborative	Highly Coordinated	State Organized
Characteristics of Business Systems						
Owner control type	direct	direct	market	alliance	alliance	direct
Ownership coordination	low	low	high	considerable	considerable	high
Alliance coordination	low	medium	low	considerable	high	low
Institutional Features						
State coordination	low	considerable locally	low	considerable	high	high
Strength of intermediaries	low	considerable	limited	high	high	low
Financial system	unpredictable	locally credit based	capital market	credit	credit	state controlled credit
Strength of collaborative public training system	low	considerable	low	high	low	low
Union strength	low	considerable	limited	high	considerable in enterprises	low
Trust in formal institutions	low	medium	high	high	considerable	limited
Characteristics of Firms						
Authority sharing with:						
(a) Business partners	low	medium	low	considerable	high	low
(b) Skilled workers	low	medium	low	considerable	medium	low
Contribution of skilled workers to organizational capabilities	low	considerable	low	considerable	considerable	limited
Dominant firm type	opportunistic	artisanal	isolated hierarchy	cooperative hierarchy	allied	state-dependent

Source: Whitley (2000)

2.2.3 *National Innovation and Learning Systems*

While business systems focus on the generic features of societies influencing the operations of enterprises, national learning and innovation systems can be interpreted as a specific field of attention within national business systems. Most authors include learning as well as innovation in their definition. However, important differences are in terms of (a) a focus on government only or to include the private sector (or the whole society) and, not altogether separate, (b) whether to limit the definition to organizations, explicit programmes and activities, and regulations or to include all institutions as well in the spirit of national business systems.

Thus for some (for example McKelvey 1997) innovation systems can be broadly defined as the ‘network involving individual and collective processes of searching, learning, and selection among different innovation opportunities, including technical and economic dimensions’. This definition includes institutions in the widest sense of the word. In a more limited fashion, Lundvall (1992) describes a national innovation system as including ‘all parts and aspects of the economic structure and the institutional set-up affecting learning as well as searching and exploring’. Here, the term ‘institutional set-up’ refers more to organizations than to institutions in the wide sense of the word.

Referring back to the Resource Leverage Model discussed in section 2.1, the National Economic Learning System emphasizes that more is needed for fast industrial development than just competences of firms. Potential for technological progress by firms must be understood in their relation with the institutional environment (as also emphasized by the business systems approach).

For the purpose of this paper (slowly industrializing countries), step one of the Resource Leverage Model is the most important one. Many developing countries are still in the struggling to establish a reasonably strong industrial sector. Of course, the million-dollar question here is how to prepare the ground in those circumstances. And how long will it take to do so? Experiences of South Korea and Taiwan indicate that the preparation period was rather long (about twenty years or longer) and not a miracle at all.

Since this paper is on learning of firms (including innovation) in the context of developing countries, learning involves a wider scope of activities inside and outside of the firm than is intended in most definitions of national innovation systems (e.g.

learning how to manage, learning basic business skills, learning to export and import competitively).

While this paper agrees with the all inclusiveness of the broad definition (as McKelvey's above and also Mathews definition of National Economic Learning Systems in section 2.1), it is useful to analyse national innovation systems in terms of actors (focussing on government, firms, individuals, society) and in terms of composing parts (institutions, organizations, activities, and regulations).

From the perspective of possible government intervention to stimulate learning an innovation of firms, a focus on public action could be defended, emphasizing the concrete manifestation of the role of government in business systems in terms of organizations, activities and regulations (see Table 2). Yet, these public actions will have to be fine-tuned to the requirements of civil society and the private sector. This will involve the business system at large as well as other aspects of social assets and liabilities. In the absence of clear directions, the danger is that governments, donors and advisors start creating institutions that are really more appropriate for later stages, both in terms of what industry requires and what the national system is able to offer (institutional capability).

For this focus on government, its organizations, its policies and programmes, perhaps a better term would be the Public Innovation and Learning System (PILS). This choice is a matter of convenience and not necessarily a matter of narrowing the range of explanations.

A simple definition of a Public Innovation and Learning System is: all public activities and regulations that impact on learning and innovation in enterprises. This definition includes (semi-) public organizations, government policies and programmes. In countries with dominant donors, their activities in this field could also be taken onboard. Table 2 gives a detailed overview of government-initiated measures. This table can be taken as a more elaborate descriptive definition of a PILS (when the particular public organizations supporting these policies are included).

A concrete elaboration of the public innovation and learning systems for particular countries along the lines of table 2 will lend itself to posing questions about the appropriateness of these interventions in relation to the rest of the innovation system, the business system, social capital and social liabilities.

2.2.3.1 Business Development Services

Business development services are a catchword for all public and private support services available to enterprises. These can range from labour skill training programmes, accountancy consultancy and training institutes to advice on markets, technology and productivity.

The current vogue is to direct development interventions of government and donors towards market development for business services: articulating demand and supporting supply. For each particular sector in a particular country the big question is what services are ready for this treatment. And if not, how to assess the real needs of enterprises and what alternatives for service delivery are available. The experience in this field is not yet fully evaluated and initiatives will have to be taken within a well-monitored environment with sufficient flexibility for experimentation.

TABLE 2
Components of innovation and learning policies

Relationship with the market	Type of measure	
	Financial measures	Non-financial measures
Public provision of goods and services	<ul style="list-style-type: none"> • Subsidizing exchange of R&D personnel between public and private sectors • Subsidizing trade fairs and participation therein 	<ul style="list-style-type: none"> • Policies aimed at diffusion of technology • Human resources development policy • University and government R&D • Public science • Technology and productivity support • Industrial standards • Export promotion programmes • Quality promotion programmes • Entrepreneurial development programmes
Modification of market incentives	<ul style="list-style-type: none"> • Tax incentives for R&D • Direct funding through grants, soft loans, loan guarantees for R&D projects • Promotion of national R&D projects • Joint cooperative R&D projects between government and private sector • Training incentives 	<ul style="list-style-type: none"> • Public procurement particularly in defence • The intellectual property right (IPR) regime • Elements of industrial and trade policies • FDI policies • Local content requirements
Support of the improvement of market mechanism	<ul style="list-style-type: none"> • Creation or improvement of specialised financial market mechanisms (e.g., venture capital) • Creation or support for small-scale enterprise financial institutions 	

Source: Substantially adapted from Mani (2002)

This cautious approach towards developing the market for business development services could also be taken for government support institutions. Rather than simply reproducing the industrial support organizations from successful countries, the demand for such public services as well as the supply capacity of Government should seriously be taken into account. In most slowly industrializing countries, any observer can witness that the various industrial support institutions are unable to fulfil their role, partly because of poor staffing combined with over-ambitious objectives, partly because there is a misfit between what these institutions have to offer and what enterprises need.

National innovation and learning systems must grow more organically in response to actually felt needs of most enterprises and in interaction with the more dynamic elements of the industrial sector.

2.2.4 Inter-organizational Learning

Clusters and industrial districts involve learning between organizations. A useful categorization of types of learning and their relation is provided in table 3 below.

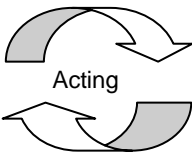
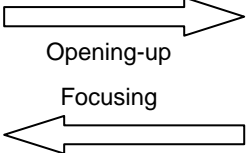
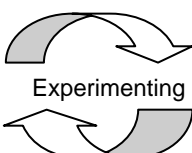
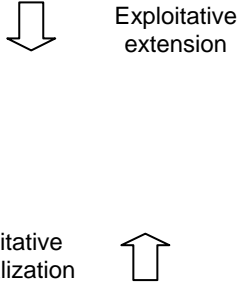
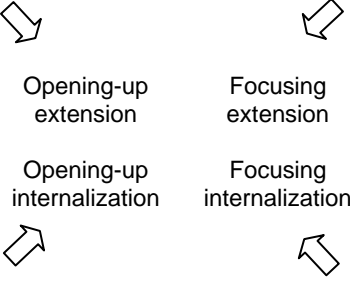
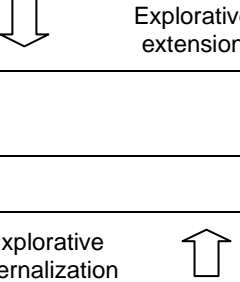
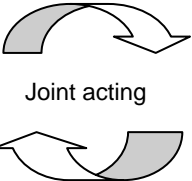
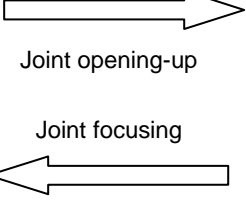
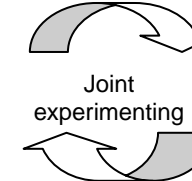
Within the organization, changes can occur between periods of exploitation and exploration (opening-up and focusing). Between organizations (at the joint level) there can also be (periodic) changes between exploitation and exploration. When one firm benefits from the inter-organizational level, it is called 'internalisation' and when a firm contributes to the joint level it is called 'extension' (Holmqvist 2003).

The interesting part of the diagram is the box (dynamics, dynamics) where internalisation and extension occur. Opening-up extension means joint learning between firms from excellence in individual exploitation of another firm, implying exploration at the joint level. Focusing extension takes place when firms jointly learn from innovation in one firm leading to joint exploitation. Focusing internalisation occurs when a firm applies the results of joint exploration, while opening-up internalisation refers to the possibility that joint experiences in exploiting may provide to the individual firm the variety of experiences required for innovative activities. Through the joint level, cognitive distances between learning actors and experiences/practices of others are mediated and reduced.

These forms of learning apply between strategic alliances, partners, and even joint ventures where the parent company keeps a certain distance from its ‘children’ and behave more as a ‘sister-company’. It could also be usefully applied to firms in industrial districts and clusters where the joint level is formally more at arm’s-length, but other more informal mechanisms exist ensuring a joint level.

An interesting extension of this diagram would be to adjust it to the type of cooperation between PILS and the private sector.

TABLE 3
A dynamic model of Intra- and Inter-organizational Learning

	Exploitation	Dynamics	Exploration
Intra-organization			
Dynamics			
Inter-organization			

Source: Holmqvist (2003)

2.2.5 Human Capital

In contrast to social capital, which emphasizes common or shared values, the term ‘human capital’ usually has a more individualistic connotation, referring to the set of skills and competences individuals have in fulfilling a productive role. Values and practices of individuals (shared or not) are not normally included in its definition. As such, it captures only part of the value that is embedded in human society.

Human capital increases by individual learning, perhaps through social organizations and institutions such as the educational system but its definition refers to the individualistic gain in knowledge and skills. Government is a major actor in skill formation through the educational system, vocational training, entrepreneurial development programmes, and other programmes supporting training in firms. Much of the learning in the formal system is explicit but also contains many tacit elements. After all, the medium is (at least part of) the message (McLuhan 1964).

While business systems relate to social capital (as a subset of social capital, confined to the working of economic systems), the national innovation system can be interpreted as a focus within business systems on the field of innovation and learning. The national innovation and learning system also includes the potential presented by inter-organizational learning in clusters, commodity chains and industrial districts. Human capital is the sum of skills and knowledge acquired by individuals through, amongst others, national innovation and learning systems.²¹

3 INTRODUCTION TO THE INDUSTRIAL SECTOR IN LAO PDR

3.1 Introduction

Lao PDR is a landlocked country with a long and rather narrow shape towards the southeast, and widening in the northwest, the region above its capital Vientiane. It shares borders with China, Myanmar, Vietnam, Cambodia and Thailand. With a size of just over that of Britain and with a population of slightly more than 5 million (growing at a rate of 2.3 percent), its population density is quite low at 22.0 persons per square kilometre.

In economic terms, Lao PDR is predominantly an agricultural country with agriculture contributing about 51 percent of GDP in 2001, and employing around 85 percent of the population (ADB 2003a). The service sector accounted for 25 percent of GDP and the industrial sector 23 percent (IMF 2002).

The sections below will provide some background information on political, economic and social developments in Lao PDR in general (section 3.2), and the manufacturing sector in particular (section 3.3), including its institutional environment and innovation and learning system (section 4.3).

²¹ Although usually applied to labour, entrepreneurial skills should also be included.

3.2 Political, Macroeconomic and Social Developments

Laos was created as an independent state in 1949, after a period of French colonization (from the late 19th century).²² Until 1975 it was the playground for military interventions in a regional and international setting, involving the USA at war in Vietnam. In 1975, the Pathet Lao (Lao Revolutionary Movement) set up the Lao People's Democratic Republic (Lao PDR) and declared the Lao People's Revolutionary Party (LPRP) as the ruling party, which it still is today.

Central Government consists of 13 ministries, the Prime Minister's Office, The Bank of Lao PDR (Central Bank), the State Planning Committee and the National Mekong Committee. Major decisions can only be taken with the Party's consent.

3.2.1 Transition to market economy

In 1986 Lao PDR adopted the New Economic Mechanism (NEM), an overall policy to move to a market economy in a gradual fashion. NEM has made considerable progress in liberating prices, eliminating subsidies, introducing a market rate for foreign exchange, and opening the economy for private investment of both local and foreign investors.

In 1988, the financial sector was restructured with the introduction of a two-tier banking system. However, the financial sector is still dominated by three state-owned commercial banks facing liquidity problems because their large portfolio of non-performing loans in the state owned sector and, to a less extent, in the manufacturing and construction sectors (IMF 2002).

A great deal of progress has been made with privatising state-owned enterprises. Out of the 640 state-owned enterprises in 1989, only 93 remain as fully state-owned, with 32 declared as strategic. In terms of employment, the size of the state-owned sector has been reduced from about 10 percent of total employment in 1990 to about 1 percent. Yet, non-performing loans to the remaining state-owned enterprises are one of the main causes of the poor performance of the financial sector (ibid.).

Current financial sector policies include immediate performance improvement of the banks, restructuring of state-owned enterprises in terms of tariff adjustments and

further commercialisation and privatisation in order to limit their dependence on transfers from the banking system, and allowing further access of private banks to Lao PDR, also in the country side (ibid.).

In line with its commitments to the Asian Free Trade Agreement (AFTA) and its preparation for membership of WTO, Lao PDR will continue with its policies of price and trade liberalization (UNDP 2002).

Foreign investment has suffered from the Asian crisis with its lowest value of 22 million dollars in 2000, strongly picking up again in 2001 (at 1,154 million dollars) and less so in 2002 (at 278 million dollars in the first four months). Over the years, Thailand has been the most important source of foreign investment (32 percent of the total value over a six-year period and 18 percent in terms of numbers of licensed projects), followed by France (at 22 percent in value and 11 percent in number of projects), China (4 and 11 percent) and Malaysia (4 and 4 percent). Quite a large number of smaller investments (in terms of value) came from South Korea (10 percent in term of number of projects), Japan (6 percent) and Singapore (4 percent).

3.2.2 Macroeconomic and social development

Over the last decade, Lao PDR enjoyed brisk economic growth with rates of about 7 percent (see table 6). This is remarkable given the fact the rest of East Asia, in particular Thailand, was hit by deep crisis and underscores the limited integration of Lao PDR in the regional and global economy, in particular the limited liberalization of the capital market. In Lao PDR the crisis period (1998-1999) was marked by slower (but still quite strong) economic growth and very high inflation. The last two recorded years saw a slowdown in economic growth with 5.9 percent in 2000, 5.5 percent in 2001 and again an estimated 5.5 percent for 2002 (IMF 2002; ADB 2002). Inflation came down from over 100 percent in 1999 to 23.2 percent in 2000 and 8.5 percent in 2001. All major sectors of the economy expanded, but at different pace.

Crude materials (which include wood) still form a large part of total exports. Lao PDR displays an import pattern typical for a poor country in the sense of being

²² Before that the territory of what is now Laos passed through a long and complicated period of power relations mainly with Thailand, but also involving the Khmer from Cambodia in the early history, and invasions from Burma and China in more recent years before the French rule.

dominated by fuel, capital goods and manufactured goods (Brenning, Davading, and Dissmann 2002). Referring to the year 2001, for exports, Vietnam is the most important trading partner (41.7 percent), followed at great distance by Thailand (14.9 percent). In contrast, most imports originate from Thailand (52.5 percent) with Vietnam (26.8 percent) in the second place (ADB 2003b).

The industrial sector grew at the fastest rate (on average about 10 percent varying between the extremes of 7.5 and 17.3 percent, leading to an increase in its share from 16.7 percent in 1992 to 22.6 percent in 2000 (table 6) and 23.6 percent in 2001 (IMF 2002).

Thus the manufacturing sector, the focus of this study, has entered a dynamic period driven by the processes of transition, privatisation, liberalization and foreign investment. This development takes place in a context characterized by rather limited human development and under conditions of poverty.

In terms of education and human capital development, Lao PDR still needs a long way to go. Adult literacy rate is 68.5 percent and only 33.2 percent of all villages have a complete primary school. Its educational index is 0.52 (between 0 and 1.00, with developed countries close to 1.00), compared to 0.84 for Vietnam, 0.84 for Thailand and 0.66 for Cambodia, putting Lao PDR at par with countries such as Nepal (0.48). In addition to its low ranking, large differences in educational attainment in Lao PDR exist between regions and in terms of gender (UNDP 2002).

Out of 173 countries, Lao PDR ranks as number 153 from the top on the Human Development Index, with Thailand at 70, Vietnam at 109, Cambodia at 130 and Nepal at 152, just above Lao PDR (UNDP 2003).

On the scale of the Human Poverty Index, Lao PDR performs only slightly better with its rank of 64 out of 88 developing countries measured, leaving Cambodia at 75 and Nepal at 76, but far behind Vietnam at 43 and Thailand at 21. Yet, life expectancy at birth is as low as 53.5, compared to 56.5 in Cambodia, 58.6 in Nepal, 68.2 in Vietnam, and 70.2 in Thailand (ibid.).

In 2001 there were an estimated number of 15 telephones (fixed lines and mobile) per 1000 inhabitants and 3.0 personal computers. Access to Internet is available mainly through Internet café's in the tourist areas, but increasingly also through home and office subscriptions. The number of Internet users is roughly estimated at 10,000, increasing from 6,000 the year before (World Bank 2003).

Given its poverty and its transitional policies Lao PDR received much aid. ODA fluctuates between 20 and 25 percent of GDP (UNDP 2002) and plays an important role in institutional development, policy development and financing of public investments and government deficits (with expenditure overshooting revenues by 63 percent). Consequently, donor presence in Vientiane is strong.

3.3 The Manufacturing Sector

Data and statistics on manufacturing and manufacturing trade are incomplete, unreliable, and inconsistent (Brenning 2000).

With its share of about 75 percent, the manufacturing sector constitutes the major industrial sector of the industrial sector. The rest of the industrial sector comprises of electricity, gas and water (about 13 percent) and construction (12 percent). Given its share, the manufacturing sector is primarily responsible for the high growth rates in the industrial sector. In 2001, the manufacturing sector recovered from the Asian crisis and grew with a substantial 11.8 percent as compared to 7.2 percent in 2000 and 7.1 in 1999 (ADB 2003b).

In terms of number of establishments the manufacturing sector is dominated by small-scale enterprises. In 1999, there were 88 large-scale enterprises employing 27,318 workers (36.2 percent), 322 medium-scale enterprises employing 5,359 workers (7.1 percent), and as many as 21,760 small-scale enterprises employing 42,723 workers (56.7 percent).²³ As usual, in terms of output, the large-scale enterprises dominate gross output with 15 large-scale enterprises producing 75 percent of gross output (Tas and Phousinghoa 2002).

In 1999, state owned enterprises represented 5.4 percent of manufacturing establishments, 11.4 percent of employment, and 20.4 percent of manufacturing value added. Domestic private investors owned over 54 percent of all manufacturing establishments, but produced only 22.6 percent of value added with 32.4 percent employment. The ownership group consisting of joint ventures and fully foreign owned businesses accounted for 40 percent of all manufacturing establishments, produced 57.0 percent of manufacturing value added, while employing 18.8 percent

²³ Definition: large-scale enterprises (>99 employees); medium-scale enterprises (10-99 employees); small-scale enterprises (<10 employees).

of manufacturing workers. The degree of foreign penetration in Lao PDR's manufacturing sector is therefore quite high.

3.3.1 Major sectors

Four sectors dominate manufacturing: (a) food processing, (b) wood processing, (c) textile and garments, and (d) construction materials. In the formal sector, together they account for 80-85 percent of manufacturing output, (probably) more than 90 percent of manufacturing employment, 95 percent of exports of manufactured goods and about 55 percent of total Lao exports (*ibid.*). However, much of the value of output (and exports) is generated outside the manufacturing sector, e.g. in agriculture (food and wood products), in mining (construction materials), and through imports (textile and garments: clothing).

3.3.2 Opportunities and Constraints

A recent technology needs assessment report (Aguirre and Southavilay 2002) identifies a number of important constraints that affect all industrial sectors.

There are five constraints directly relating to export performance. First, there is a lack of information systems or references to information systems so that Lao entrepreneurs lack practical access to updated export market information; second, general knowledge on the conditions prevailing in exports markets is insufficient; third most firms lack design capabilities for export product development; fourth there is a lack of personal contacts between local producers and foreign buyers; fourth, because of high transportation costs, competing products are cheaper in export markets; fifth, there is little export quality control, partly caused by a lack of standards and certification of products.

These constraints to exporting are reinforced by a number of general production constraints. First, the labour force has insufficient skills. Second, technical and vocational schools tend to be of low quality, are poorly managed and have limited infrastructure. Third, there is a general inability to produce large volumes. Fourth, raw materials are imported at small volumes. This, together with high transport costs, leads to higher prices for raw materials.

In the field of the business environment of the manufacturing sector, Brenning (2000) adds a few other constraints to this list. These are distortive Government policies, weak banking system, lack of business support services, volatile exchange

rates and problematic access to foreign exchange, inadequate laws and regulations, cumbersome and slow import/export and foreign investment licensing procedures.

At firm level, Brenning (2000) mentions deficiencies in management, marketing, finance, technology, and labour skills. Related to this, own interviews with local consultants established that entrepreneurship is generally weak, particularly lacking the aggressiveness required to quickly react, enforce deals and lobby for contracts. This was explained as a cultural characteristic, which, when perceived from the point of view of capitalist development, could be understood as a social liability.

Opportunities for manufacturing in Lao PDR are offered by its geographical position. Although landlocked, Lao PDR has a central position with regard to China, Cambodia, Myanmar, Vietnam and Thailand. This position can be exploited in terms of market access, export oriented foreign investment, distribution and transport hubs, and location of regional facilities and institutions. Low wages coupled with good learning capability can for some time count as an opportunity, while special (but temporary) advantages of privileged access to USA and European markets may (and do) provide for a starting point on which to build further manufacturing competence.

4 EMPIRICAL FINDINGS

4.1 The Nine Case Study Firms²⁴

4.1.1 Silk Garments

Silk Garments has been established in 1999. It produces silk hand-woven cloth and garments of high quality and price for the export market. Some of the garments (for example a three piece dress) fetch more than 1000 US\$ in Japan.

The female owner has always been interested in traditional weaving and her mother taught her the basic principles. She gets her ideas from the market in Thailand and Japan.

On the premises there are 18 handlooms with one female worker each, while six women are decorating the cloth and garments. In addition, the firm has about one hundred handlooms in some villages in Southern Laos. Handloom-based silk weaving is a traditional art in Laos. The young women have learned operating the handlooms in the villages from their mother. The men, using simple technology, construct the

²⁴ Some details (e.g. names of firms) have been changed to improve confidentiality.

handlooms in the villages. She maintains quality standards by employing women with good experience.

In terms of the characterization of business systems in table 1 this firm is a typical opportunistic firm, organizing locally available capabilities, e.g. labour skills and technology, and exploiting existing markets. One source of learning is the market where the owner learns from the designs and production methods of similar products and where she learns where to find her inputs directly.

Another source of learning is the training offered by the producers of natural and chemical dyes. Training is for family members only, a typical application of bonding in situations with asset specificity described by transaction costs economics. Within the firm, transfer of this knowledge obtained from outside is through training of workers on site and extension in the villages. These are examples of conscious efforts to change the scripts (ways of doing things).

Some marginal innovation takes place again through the family using opportunities at hand. The only contact with government services is through Government's assistance in attending trade fairs in the region. However, no direct impact of this on business performance was recorded.

The firm operates using technologies embedded in local culture. This has had implications for the way the business is organized with a central unit in the capital and extension in villages, using local variations in patterns and techniques. Social capital has been used positively in this firm. In contrast with this, the (formal) public information and learning system has little or no impact on this firm.

Although different forms of learning and learning sources have been identified, the driving force of learning was the woman entrepreneur, who was continuously looking for opportunities within her reach to improve the firm's competence and expand its production.

4.1.2 Religious Sculpture Company

The Religious Sculpture Company is involved in the following activities: Painting, sculpture, modelling, silver art, basket making, musical instrument production, furniture and pottery. Of these, the modelling is by far the most successful production line. They produce bronze Buddha's for temples using simple labour-intensive technology. Total employment is 40. Total sales are about 150,000 US\$ of

which about 10 percent are exports to the USA (through a Lao contact person) and about 75 percent consist of bronze modelling.

The Director has training in arts with a diploma from Saigon in 1966 and another 2 years of training in Toulouse, France in 1970. Upon his return he became director of the Vientiane School of Arts. In 1975 he became Director of the Department des Beaux Arts in the Ministry of Information.

This firm is rather special since it started as a Government department, got privatised but still continues a relationship with Government: its employees have the rights of civil servants and when dismissed can even go back to Government. It is still in the process of focussing its commercial market niche (bronze Buddha's). When it would have finalized this process the firm could be described as opportunistic, having adjusted itself to the prevailing market conditions utilizing existing resources.

The most important learning source is the formal schooling system. Its director is a well-educated and skilled artist/craftsman and so, but to a less extent, are his managers. The workers have received their training in medium level polytechnics for artistic skills. Yet the training in schools is not adequate but too theoretical. Workers still have to learn the details of practical work (their scripts) from the managers and their co-workers.

Another learning source is formed by the group of customers, who visit the firm and adjust the standard model to their own designs.

The company is embedded in local culture in terms of its main product. Yet at the same time, it depends on the formal schooling system for its training and technology. Apart from this there is little or no interaction with the rest of the PILS.

There is little evidence of technological improvements in this rather labour intensive and simple casting method. With enough managerial effort, the company could capture a much larger part of the market.

Thus compared to the Silk Garments firm discussed above, is less dynamic and opportunistic, and only partially embedded in local culture. First level learning takes place but second level learning (changing the scripts) seems virtually absent.

4.1.3 Urafiki Sawmill

Urafiki Sawmill is a foreign business with majority ownership (75/25, foreign/Lao). Total employment in the company is about 200 of which 4 are expatriates. This firm is considered one of the more innovative firms in Laos.

The sawmill started production in 1990 using second hand technology from abroad, about 40 years of age. The director claims this to be the most modern equipment in South East Asia. The wood drying section is new and forms the most crucial part of the operation in terms of its impact on wood quality. The company still experiments to get the highest quality. The wood is used for simple garden furniture and floors for the local market, after an export contract with a multinational furniture firm turned sour.

Because of liquidity problems arising from the loss of export orders, strategy meetings during the last two years are all about how to survive and no time or attention is given to longer-term issues.

The company employs a lot of Lao personnel also in the higher management functions. There are two Lao managing directors (production and administration) and two Lao production managers, one for the sawmill and one for the wood plantation.

Given its potential export orientation quality control is very important and is influenced by various parts of the production process, particularly cutting and drying. The choice (and the age) of trees has introduced another quality problem (in the drying process) but they have mostly solved that, although further quality improvements are underway.

Transfer of skills between foreign technicians and Lao technicians has not been optimal but the current sawmill manager came equipped with a high level formal degree and a good sense of experimentation. He is currently further improving the drying process, using his own insights and initiative. Given that he is involved in a search for the best practices, this could be called level-two learning (see section 2.1).

Also woodcutting is an artful job and the workers need to learn an intuitive handling of machines manipulating the logs. Their experience grows with time and experience, learning from the manager and co-workers: a typical case of first level learning.

Apart from the formal training of the Lao managers, there is no assistance in any form by Government (some form of financial assistance would be crucial in the present situation). Training in administrative matters, such as accountancy, can be obtained from commercial sources. The wood exporters association is not able to give any support either. Thus in a limited sense, both NILS and PILS have a role to play, but more could be done by Government.

In this case study, social capital seems to be missing in terms of a relationship of trust between government and the firm. This is not exclusive to a foreign firm in the wood sector but also the case with locally owned sawmills, as the next case study will show.

Three points may be worth mentioning in this context: trust must develop as a process of transition from a controlled economy to a market economy; trust may be different between local enterprises and government as compared to trust between foreign enterprises and government; finally, trust in the wood sector, with its fragile renewable resource that is in fact potentially exhaustible by overexploitation, may be limited because of the conflicting interest between private firms (exploitation) and government (conservation).

4.1.4 Cassava Sawmill

Cassava Sawmill is an old family business starting production in 1963. The company produces only sawn wood using rather new 10-years old technology (newly purchased). The whole of its output is exported to one buyer in Thailand. Logs are bought from government, which gives licences to woodcutters to cut down specific trees (North Laos).

There is a weak form of organization in the wood sector. There are 3 to 4 groups of sawmills in Vientiane but they hardly talk to each other. She does not see any use of cooperating with them to jointly face the current challenges. Only recently they talked about the negative consequences of the recent government policy (see below).

The workers require a lot of training. There is no formal schooling in this field and they have to learn from experience guided by the supervisors.

The firm faces two major problems: a problem in the relation between this enterprise and government and a problem of a declining learning curve. To start with the latter, the firm has been in the same business for more almost forty years, only replacing its sawing equipment with some more recent vintages. While the first owner was trained as a mechanical engineer, his daughter and sons were not exposed to any learning (apart from secondary school) other than in the specifics of their own business.

The second problem is that the Lao Government has decided not to allow unprocessed sawn wood exports any longer. They now have to try and make furniture. But that is an altogether different business for which they have no expertise. With the help of some Thai friends, the director has undertaken some market research to find out about the type of customers, the marketing process, the technology to be used, and how to obtain finance. However, it is difficult to borrow from a local bank and they will have to use own finance. The best strategy, she thinks, is to start a joint venture with a company from China, Malaysia or Singapore. The current Thai buyer is not interested. Even other established and experienced furniture companies have not expressed strong interest. They are afraid that the Lao Government will impose even more restrictions on the wood/furniture sector.

Thus this otherwise logical policy measure taken by Government has created restructuring problems for the firm. But because of its declining learning capability, the firm does not have the experience to restructure and to learn the business of more advanced wood processing. At present, a very low-trust situation with Government has developed (also noticeable in the interview).

The manager finds enough support in the market for auxiliary services in technology, legal advice and accounting and does not perceive a shortage in the field of business development services. Yet restructuring does constitute a major learning and management problem. The manager tries to solve this through her contact with Malaysia.

On the job training is very important for the firm in the absence of specific formal schooling. This applies both to the managers as well as to the unskilled workers. The source of this knowledge is with the family and supervisors, transferred to them by previous generations.

With a high labour turnover for low-skilled labour, the core-competences of the company can be understood to reside in the supervisors and the family.

Although this firm can also be characterized as an opportunistic firm by exploiting Lao PDR's hard wood, the firm has not transformed itself in any way. Perhaps the opportunity was so good, that no need for diversification arose. Another explanation may be found in the characterization of Lao entrepreneurs as 'not-aggressive-enough' mentioned in section 3.3.2, an incidence of a social liability.

4.1.5 *Sweet Noodle Factory*

The owner of Sweet Noodle Factory has a degree in civil engineering and started with a construction company after finishing his degree in 1986. However, this business was not flourishing very well since, as the owner said, 'He had no contacts in government; therefore he could not get contracts'.

After a preliminary check in Vientiane he found that there were only two noodle factories at that time and that a lot of noodles were imported from Thailand. This was enough to convince him that there was a large local market to be serviced.

In 1994 he started to work with a partner in a noodle factory, where he learned the business. He started his own business in 1996 with second hand machinery from Thailand employing 30 workers. He trains his own personnel. Labour turnover is large: every year about 30 percent are leaving.

After installing the machines, the same Thai supplier provided three weeks training on how to run the machines and to perform routine maintenance and troubleshooting. For difficult tasks, the technician has to come from Thailand.

His wife and sister do the administration. His wife has secondary school and his sister is an irrigation engineer. The machines are now 15 years old and he has ordered new machines from Thailand. Through a friend he has visited several machine suppliers and he has opted for new machinery that can produce more than four times as much with only one fifth of the labour.

When this new investment is up and running, he will leave this business to his wife. He will start a new business in computer networks. The opportunity arose because his brother has worked as a computer engineer in Australia and is ready to come back to Laos.

This case shows an enterprising young man with a good education from the University of Laos, who looks for opportunities feasible in the Lao PDR context. He shifts from one sector to the other, moves on when he has no success and moves on also when he has success. He seems to rely less and less on his specific professional skills and more on his entrepreneurial talents.

He actively searches for opportunities and learns from suppliers and competing firms about technology, management and the market. Most of the firm specific knowledge rests with him self but he is transferring this (bonding within the family) to his wife and sister.

A lot of effort goes into labour training because of the high turnover. All of this training is of the first-order-learning variety. With the training of supervisors, the knowledge base of the firms begins to extend a bit beyond the owner/manager and his family.

Quality control does not feature strongly as a driver for learning since the process is rather simple, hygienic regulation and control is not very well developed, and he produces only for the local market.

The new business in computer networks will again use the experience of his brother as the core-competence of the firm, thus providing an example of learning from returning skilled migrants an important source of learning also in emerging economies.

No support from government has been received or asked for at any time.

4.1.6 Unifood Industries

Unifood Industries started in 1994 as a small agro-industry processing local food (bottling and canning). In 1997 they expanded the business with the help of Thai partners with ownership share about 50/50 (but they were not clear on the issue). The Thai partner was a friend of the director and the relationship has been very smooth. Their technology is second hand and USA made.

The firm employs 300-350 workers in the high season. In the low season they only employ 50 workers. Unifood exports 80 percent of its production to Europe (35 containers), Vietnam and Thailand. All orders are by contract and are exported through their Thai partner except those to Vietnam, which go directly from Laos. As in other firms, the formal education system in Lao PDR and abroad has provided high-level expertise. All technicians are engineers trained at the University of Laos in the agro-engineering department.

The factory experiences two related problems. Agricultural supply is insufficient to keep the factory occupied throughout the year. This explains the seasonality of the employment cycle. Capacity utilization is therefore too low leading to lower profits.

The problem related to insufficient quantity is lower quality. Because of the seasonal employment, they get different farmers to work in the factory every year. This means not only higher training efforts but also that the workers never attain the highest level of competence.

However, with its export orientation, quality control for its food products becomes extremely important. Training receives much attention. Much of the learning takes place by relying on the Thai partner firm, but once absorbed in the form of human capital by its managers and technicians, it is now transformed into organizational capital by training of workers and establishing work practices. Ironically, the seasonality problem limits the effectiveness of first order learning processes. They tried to achieve ISO 9002 standards but have not yet quite managed, although they are very close. They now export through Thai certification. Some of their products are labelled 'made in Laos'; others are labelled 'made in SE Asia'.

While they are able to deal with smaller routine maintenance and smaller repairs by themselves, for larger repair jobs they need assistance from technicians of the Thai partner. These technicians come every six months anyway for routine inspection.

To achieve the right quality of inputs, they had meetings with the farmers about use of agricultural inputs and to work with local government to provide extension. The factory also has a small experimentation plantation for demonstration and extension. The Government (Ministry of Agriculture and Ministry of Industry and Handicrafts) helps to identify which farmers are able to produce good quality. Previously, they sent their own agro-technicians to the villages but that proved too costly.

The firm did not interact with elements of the PILS, where one could have expected a Government role in quality control (the firm does not have any testing facilities). Neither did it seem to have much interaction with local consultants or other commercial business development services. Of much more crucial importance is the link with the Thai firm, which is the source of quality control capability, training and product innovation.

With this support, and in the context of Lao PDR, this firm is dynamic and innovative, actively looking for ways to improve its competences: a case of second order learning, where first order learning poses some problems.

This case study shows how the typical features of the production environment affect the profitability of the firm. The firm is learning how to deal with this and has tried, so far unsuccessfully, various avenues including lobbying for local government support.

Interestingly, this shows another type of learning (typical for human behaviour): how to influence the environment for optimal enterprise performance. Through its efforts the firm may induce changes in farmers' practices and local government activities beneficial to itself. These are not first order scripts or routines; neither are they second nor third order learning categories. One way out of this problem is to conceptualise a firm in relation to its environment. Aspects of the local environment become part of the firm's definition. This would complement the notion of the firm developed in the Resource Leverage Model, which emphasizes the importance of the national economic environment and the role of the state on firms.

4.1.7 Lao Quattro

Lao Quattro is a medium to high quality garment producer for exports on demand by large buyers. It specialises in sport wear and produces for Adidas, Intersport, Puma and Champion. It uses modern automated technology (trim and cut). Most sewing machines are of the latest capital-intensive technology. This allows for higher quality and consistency, even with the high rate of labour turnover. With quality and consistency guaranteed, buyers will not shift so easily because of small cost advantages. The director estimates his firm's level of competence as similar to Turkish, Greek and Portuguese firms. Quality control is exercised within the commodity chain through stringent buyers' requirements and checks.

Lao Quattro is part of a larger company, with investments in Hong Kong and China, where its main office is located. The director owns 30 percent of the shares with the foreign company owning the rest. Total employment of the whole group is about 6000 with roughly 1000 employees in Laos of which 25 are foreign. Its middle level technical personnel such as accountants and technicians are all Lao. Its exports amount to approximately 10 million US\$ yearly.

Right now they are planning a major expansion almost doubling the size of the factory. In addition they are moving to a 2-shift system to thus become more cost effective. This is important since the competition in this field is increasing: prices have gone down by 20 to 30 percent in the last few years, as more manufacturers have joined the business. When these changes come into effect, he will employ 3000 workers (mainly young women).

The present director is from Thai origin. In 1974, he finished his education in a commercial college (no degree) and worked in a bank for 2 years. After that he worked for a private trading company as merchandise manager. With the help of a Hong Kong contact, he established a buying agency in Thailand in 1980 mediating orders that came from Western markets to Hong Kong at first and later to Thailand directly.

In 1990 he started a small company in Lao PDR to make use of Lao's quota to the EU after Thailand had exhausted its possibilities. KTC placed its first order with him in 1992. In 1996 the foreign company took over his business leaving him with a 30 percent share and financed the expansion in a new building.

He uses a German consultant on quality and technology. The choice for a German consultant was a deliberate one, expecting expertise on market trends and technology. Also buyers visit the firm and advise on how to improve the production process. When he agrees with their advice, he is eager to implement these new ideas. For example, Adidas gave him ideas on how to reduce work in progress.

He uses one subcontractor in Lao PDR for about 5 percent of his production. This is in the field of producing sport pants, a relatively simple operation.

There are no training facilities in Laos for unskilled workers. But the Garments Association of Laos organizes courses for higher skill training on a full cost basis. He does not see much use for courses organized by Government, with the exception of three months courses for basic skills, adapted to the absorptive capacity of the unskilled workers. The Director stimulates his personnel to come forward with their own approaches to organize their work and their own solutions to small problems. Experienced workers are used to train new workers. He conducts strategy meetings with his top managers on issues of technology and marketing. He has learned from Lao culture how to manage his Lao personnel.

There is a high labour turnover. The problem is with the Lao workers. They are mostly girls from the villages without long-term employment expectations. Very often they go back after a few months work leading to high labour turnover of almost 30 percent per year. In Laos, rural life is not luxurious but there is a basic minimum of existence, contrary to Thailand and China with an urban labour force that is dependent on industrial jobs. He expects little change in this respect in Laos for the next 10 years or more.

Information on international textile arrangements is provided by the Garments Association. According to the director, the EU will have a meeting in the coming months to discuss a flexible phasing out of the Multi Fibre Arrangement allowing extensions for poorer countries such as Laos by another five years. Government should assist in providing more information on market developments and in lobbying the EU for extension of special access arrangements. When these will cease to exist in 2004, he expects the majority of Lao garment companies to go bankrupt with job losses up to 30,000. The reason is that most Lao companies survive in the low end of the market protected by the quota system. However, with its abolishment they will face the full world market competition where China is much cheaper.

Lao Quattro is one of the few firms in Lao PDR that have reached an international level of competitiveness. Through its parent firm, it is embedded in the sportswear commodity chain and is capable of designing its own products. It is dynamic and expanding its production facilities. The case shows the importance and possibility of reaching international competitiveness before tariff related privileges and other forms of special advantages are phased out in a more liberalized world trading system. However, the drivers of knowledge and learning that made this possible did not originate in Lao PDR but in Thailand at first and later complemented by European partners.

The manager perceives the local culture as the cause of high labour turnover resulting in an impediment to first order learning. Yet, he tries to use the local culture as a social asset (social capital) rather than a social liability by understanding Lao culture and adjusting his management style to its requirements. In addition, he uses modern management techniques in order to enhance workers' first and second order learning processes. High-level strategy meetings with his top managers also contribute to the corporate learning culture. This is the only case study where learning about learning was discussed: a case of third order learning.

The capital-intensive technology contributes to higher product consistency and quality: an interesting case where physical capital facilitates the firm's learning processes. The theoretically interesting issue is that different forms of physical capital will lead to different first and second order organizational scripts.

4.1.8 *Gogo Garments*

The female Lao owner had no prior experience in business or garments production. She got her primary education in France where her father was studying for engineer. Before starting her garment business she was working as news reporter and translator with Laos Radio. She started business in 1990 with the construction of a factory hall on a good piece of land belonging to her parents.

Production started in 1992 with 100 second hand sewing machines, later expanding to 200 for the export market. A knitting unit was added a few years later. She employed a Thai production manager because she 'did not know anything'. The Lao firm gets a garment sample from a Thai agency and has to produce a batch of counter samples. If the quality is satisfactory, the contract is awarded. The Thai agency employs Thai quality controllers in her firm and gives the quality guarantee to European buyers.

Thailand can export to the USA market, while Lao PDR cannot. On the other hand, Lao PDR has access to the EU market under the quota system of the MFA. Exporting to the USA market has the advantage of large orders as compared to the EU where orders are much smaller (sometimes only 5000 pieces).

Most of the learning takes place producing the first 10,000 pieces. Larger orders are thus much more efficient. Trained by the supervisors and the production manager, the workers (all female) specialize in sewing one and the same joint, after which it is passed on to the next person. There is no vocational school training in the field of sewing. When a new girl enters employment she will get two thirds of her basic salary during the one-month training. In addition to the basic salary the firm employs a piece rate system to induce higher efficiency.

Two major problems put her out of business. The first was a breach of contract by a French firm to pay the agreed price for a large shipment of knitted garments, leaving her with the finished goods without any buyer.

The second problem occurred when the Thai production manager left the firm together with the Korean quality controller to start their own business, taking the business contact and contracts with them, leaving Gogo Garments without any orders.

Because of these two drawbacks, she had to give up the operation and is now renting the facilities to another company with a Lao owner, who is living in France. She is currently the general manager for this firm.

Yet she will not give up to have her own garment business and she has already made advanced plans to continue in a smaller factory shed on the same piece of land with 100 sewing machines. When the business is running smoothly she can expand into the original building after the lease-contract runs out.

For the new operation, she has three partners in Thailand and has made plans to set up their own agency in Thailand. To start this new company she will again employ a Thai production manager but now he will have to train the assistant production manager to take over all his functions. This (female) assistant production manager is already quite capable since she has been with the owner for a long time, almost since the start of the first operations. They have developed a relationship of trust between them.

There are few technicians in Vientiane so sometimes she has to wait until one is available. Accountancy and legal services are easily available. She is unaware of any possible government support in her field of business.

The most noticeable feature of this case study is the inexperienced manager running into problems with buyers and managers. These two problems in combination brought down her business. The manager is really learning how to do business and despite the difficulties experienced she has not given up.

In a theoretical sense, the case study shows the necessity of a certain minimum amount of human capital at the top of a firm in terms of entrepreneurial competence. In smaller firms this competence remains human capital and does not get integrated, one way or another, into the firm's memory (however defined). The blow to the firm caused by the departure of the general manager left provides further support for this. With enough resilience (also in financial terms) and to some extent this expertise can be learned by doing but it remains at the level of human capital, stored in the entrepreneur.

One interesting feature is the initiative to set up their own buying agency in Thailand, thereby reversing the current practice, reducing dependence on Thai orders, and hopefully capturing a larger share of the value added. Much will depend on the credibility of this new agency and its export quality control capability.

The case also shows the importance of trust within the organization (incomplete contracts): how it can be misplaced with drastic consequences and how it is strengthened (by relying on the woman assistant manager who has been with the firm for a long time).

Again, the role of government support is perceived as minimal, whereas there is no serious bottleneck with support service from the market. The most important learning mechanism is again driven by the export orientation, in the form of the quality control measures by Thai buying agents.

4.1.9 A Business Services Provider

Enterprise Development Consultants started in 1999 with a group of 7 experts with the general mission to promote entrepreneurship. However, they found that they did not get sufficient assignments in this field and broadened their area to SME Promotion and Rural Development. EDC consist now of 4 persons as some of their staff have joined international organizations.

EDC provides training courses such as ‘Start Your Own Business’, accountancy services, gives advice on financial systems, and prepares feasibility studies. Moreover, they cover the fields of Human Resource Development and Capacity Building.

Most of their work is in donor related activities such as counterpart training in donor-funded projects. They also play a role in the transfer of donor projects when they come to an end. For example, they have been asked by a donor to take over a project providing market information on inputs and outputs.

About 30 percent of their activities is paid for by enterprises. This concerns mainly courses with some 20 participants. For individual enterprises they have done some market studies and provided business advice. Private business does not see the importance of business development services.

EDC estimates that there are about 10 other similar organizations working in the field of business consulting and about 40 individuals independently.

EDC conducts strategy meetings on a regular basis to discuss how they want the organization to develop. They realize that much of their learning comes in the form of learning by doing and going for the opportunities when they arise. For example, they moved into rural development by working on income generating projects, an activity the fell in their normal line of business. Then they realized that a much larger market exists in that field and looked for a possibility to get involved. They realized that more competence would be required to produce quality work and started a learning process for themselves through reading and attending courses and seminars.

To retain and expand the existing knowledge in the organization they do all projects with two persons, allowing for a transfer of knowledge between these two persons and, if one of them might leave (as happened in the past), his/her field of expertise will remain in the organization.

The largest limitation they see for business persons in Laos is they find it hard to contact and lobby government, have difficulties relating to other businesspersons and improving their relations with their personnel. One of the reasons is that when private business was allowed in Laos in 1986 no entrepreneurial tradition existed. Even before 1975 (the year of the revolution), the entrepreneurial class was very small, given the size of the economy. As a result many entrepreneurs are former civil servants without long family tradition in doing business.

4.2 Learning in the Case Studies

The case studies show a number of opportunistic firms, which are not part of any local network of firms, with relationships only with their suppliers and markets and hardly any interaction with PILS. Learning takes place mainly through the entrepreneur/manager in the form of training given to the workers, with export quality control as the main driver of learning, enacted through foreign linkages.

The case studies also showed the importance of Thai entrepreneurs grasping opportunities in Lao PDR by using linkages with the export markets already developed in the Thai context. One case study (Gogo Garments) showed that also Lao entrepreneurs can learn from this and take action to reap similar advantages by establishing a buying agency in Thailand (this might provide a case for joint action).

Another case study (Lao Quattro) showed that also in Lao PDR more advanced production technologies aiming at medium to high level export quality are feasible. In fact, this may be the only feasible strategy in view of the phasing out of particular advantages arising from friendly quota and tariff arrangements and coupled with the competition of neighbouring countries able to produce at lower (wage) costs. The knowledge and learning was provided by a foreign investor who became part of a larger group of companies, while the management style was adapted to Lao culture.

The third case study, Unifood, also highlighted the importance of quality control in the food sector, again provided for by linkages with Thai investors. In addition the case provided an example of public-private cooperation as an ad hoc exercise initiated by the lobbying firm. The ability to lobby government was described

by the business services provider EDC as an underdeveloped element in entrepreneurial skills as shaped by Lao culture. An interesting line of detailed research would be to monitor these lobbying events and to see if there is a Lao way of 'doing business' in relation to government.

Two cases in more traditional crafts drew upon skilled labour found in Lao PDR. In Lao Silk, skills were embedded in local culture and [passed on from mother to daughter (weaving) and father to son (loom making)]. Drivers of further learning came from the market in combination with the entrepreneurial drive of the owner, making use of opportunities at hand (family, friends, supplier, clients and to a little extent, government). The religious sculpture company on the other hand was much more passive, slowly responding to market demand with little change in techniques and skills, relying on the formal education system for training. Perhaps the director's origin in the public sector as head of a department explains this entrepreneurial attitude.

The two sawmills, Urafiki and Cassava Sawmill provided contrasting cases: Urafiki, a foreign investor, has actively moved into furniture for exports (with mixed success), researching and learning to achieve quality output; Cassava Sawmill, a traditional sawmill relying on hard wood as its competitive advantage with great difficulties adjusting to new conditions in a process of de-learning.

The final case, Soft Noodles, showed an interesting example of an emerging entrepreneur, still in the process of finding his final niche using opportunities at hand mixed with initiative to make them work to his advantage. This entrepreneur actively sets out to learn the noodle business by joining another noodle firm, by searching for equipment in Thailand, using the technological know-how of the equipment supplier and reinvesting his earnings in more productive (and more capital intensive) technology. His plans to expand into other business lines using available opportunities underline his entrepreneurial skills.

Most cases show the overriding importance for the firm of the entrepreneur in terms of learning and organizational memory. Explicit learning processes were very few. Explicit knowledge management not practiced at all and only in some cases were there instances of efforts at formulating strategy involving others than the entrepreneur. In this respect, the (small) firm almost coincides with her/him, suggesting that at this stage of development (of firms and of the country) also learning

TABLE 4
Characteristics of case study firms and sources of learning

COMPANY DETAILS	PRODUCT AND MARKET	OPPORTUNITY	SOURCES OF LEARNING
<p>Silk Garments</p> <ul style="list-style-type: none"> • Lao female owner, no specialized training • Dynamic firm • 120 employees 	<p>Traditional woven silk garments for exports and tourists</p>	<p>Traditional weaving skills</p>	<ul style="list-style-type: none"> • Market for inputs • Competing products • Supplier of dyes • Government support • Family skills • Traditional learning • Customers
<p>Religious Sculpture Company</p> <ul style="list-style-type: none"> • Former state enterprise • Private Lao ownership • Highly trained director • Static firm • 40 employees 	<p>Bronze Buddha's and other artistic products for local demand</p>	<p>Local demand from temples</p>	<ul style="list-style-type: none"> • Formal training institutions for skills • On the job training
<p>Urafiki Sawmill</p> <ul style="list-style-type: none"> • Innovative firm • Foreign ownership • Engineers • Starting up problems • 200 employees 	<p>Hard wood garden furniture, floors for local demand and exports</p>	<p>Forest resources, plantations</p>	<ul style="list-style-type: none"> • Formal education • Experimentation • On the job training
<p>Cassava Sawmill</p> <ul style="list-style-type: none"> • Lao family business • Female director, no formal training • Static • 20-30 employees 	<p>Hard wood planks for exports</p>	<p>Forest resources</p>	<ul style="list-style-type: none"> • On the job training • Local market for technicians
<p>Sweet Noodle Factory</p> <ul style="list-style-type: none"> • Dynamic Lao owner • Engineer • 30 employees 	<p>Rice noodles for local demand</p>	<p>Local demand</p>	<ul style="list-style-type: none"> • Other firms • Formal education • Own initiative • Machine supplier
<p>Unifood Industries</p> <ul style="list-style-type: none"> • Dynamic firm • Food engineer • Joint venture Thai/Lao • Expanding product range • 300-350 employees 	<p>Canned and bottled fruits and vegetables for exports</p>	<p>Agricultural resources</p>	<ul style="list-style-type: none"> • Formal training • Foreign partners • Export quality control
<p>Lao Quattro</p> <ul style="list-style-type: none"> • Dynamic firm • Foreign ownership • Thai co-owner with strong business skills • Medium to high export quality • 1000 employees 	<p>Sports gear for exports</p>	<p>Cheap Labour, export quota</p>	<ul style="list-style-type: none"> • Export quality control • Foreign business partners • Buyers
<p>Gogo Garments</p> <ul style="list-style-type: none"> • Struggling firm • Lao female owner, no previous training • 100-200 employees 	<p>Knitted and sewn garments for exports</p>	<p>Cheap labour, export quota, industrial land</p>	<ul style="list-style-type: none"> • Learning by doing (by owner) • Thai production manager • On the job training of workers

within firms is part of the problem. Firms are not yet firms in the sense of a coordinated and motivated organization, actively involved as an organization in identifying and developing higher levels of competences using its resources available. Much, if not too much, depends on the entrepreneur.

The opportunistic nature of firms (in the sense of reacting to available opportunities rather than creating new ones) implies that learning processes are insufficient because the following factors (in isolation and combination): (i) corporate culture takes time to settle in, (ii) firms may shift to latest opportunities and/or many new start-ups, (iii) catching-up implies chasing a dynamic frontier with neighbouring countries and frontier countries proceeding fast: moving slow is falling behind and learning may be quickly outdated. Together these make corporate cultures more difficult to get established particularly with regard to corporate learning cultures, causing a vicious learning cycle leaving companies in a low level trap. Rather than seeing this as an unavoidable outcome however, this should serve as an extra argument for a concerted effort of all relevant institutions and organizations for industrial development in Lao PDR.

4.3 The National Learning and Innovation System²⁵

Lao PDR's national innovation system is very weak (Aguirre and Southavilay 2002). Also the public innovation and learning system (PILS) is still in an early phase of development. As a result, even if the activity can be listed as part of the PILS, the organization dealing with this activity may be understaffed; the scope of the activity may be narrow, the reach limited, and the impact ineffective. Interaction with the private sector is limited to provision of some training courses, organizing promotional activities, and providing some quality control through materials testing and standard setting.

Starting with the public innovation and learning system, TABLE 2 has given an overview of different activities Governments may undertake. The most important institutions dealing with policy development in the field of science and technology are the Science, Technology and Environmental Agency (STEA) in the Prime Minister's Office, the National Science Council (NSC) also in the Prime Minister's Office, the

²⁵ This section draws substantially from Aguirre and Southavilay (2002).

Centre for Industrial Research and Development (CIRD), and the National Economic Research Institute (NERI).

STEA has the mandate in policy formulation in the field of science, technology, innovation, and environment, whereas NSC has a more coordinating and promotional role in the same fields. In practice, overlap exists between the functions and authority of STEA and NSC both in the Prime Minister's Office. As yet, no policy has been developed in the field of science, technology and innovation. CIRD is located in the Ministry of Industry and Handicrafts and has a more narrow focus in the field of policies for industrial development, where appropriate contributing to STEA work. NERI has an official role in economic policy formulation and approaches this through long term studies and individual participation in short-term studies.

Regulatory functions are carried out by STEA through its department of Intellectual Property, Standards and Metrology, the department of Science and Technology and the Department of the Environment. Work has only just begun as the departments are busy building up expertise and facilities. The Ministry of Industry and Handicraft has regulatory functions specifically for industries, with overlapping responsibilities between CIRD and STEA in the fields of intellectual property rights, standards, metrology, and industrial research.

Lao PDR through CIRD takes part in the ASEAN Consultative Committee for Standards and Quality (ACCSQ). This provides a good opportunity for Lao PDR to speed up the work of STEA and CIRD in the fields of standards, accreditation and technical information, drawing on this regional innovation and learning system.

Research is more widely (as well as thinly) spread throughout various institutions in Lao PDR. STEA has three research institutes departments, namely the Science Research Institute (research in biotechnology: tissue culture), Technology Research Institute (some activities in the field of renewable energy), and the Environmental Research Institute. In addition, STEA harbours a laboratory for testing water quality. However, because of their small size, these facilities have little to contribute to the industrial sector. The Faculty of Engineering and Architecture of the National University of Laos (NUOL) is the most relevant faculty in this context. It carries out little research but is more active in short term advice to the private sector. Finally, the National Agriculture and Forest Institute conducts research in natural products development, potentially relevant to the agro-based industries.

Providing information to firms largely takes place indirectly through formal education of potential employees. To a more limited extent it is provided directly through extension by CIRD and the Lao Trade Promotion Centre under the Ministry of Commerce. Technical and skill training is done by the Faculty of Engineering and Architecture, polytechnics and vocational schools, and CIRD. CIRD provides extension to industries in the areas of productivity, technology, and environment. Some of its staff is undergoing training. CIRT has developed and run courses for entrepreneurs in productivity, management and quality improvement. No use is made of internet as a source of information on policies, regulations, markets or technology.

On the side of the private sector, the National Chamber of Commerce and Industry (NCCI) has a membership of about 300 enterprises. It facilitates trade visits and provides some general information, but has no online services.

A few other private sector associations exist: the Lao Handicraft Group under the NCCI, the Lao Women's Union (assisting village women with traditional handloom weaving), the Garments Association of Laos, and the Lao Wood Processors Group (not very active).

About 10 commercial firms exist in the field of business development services and some 40 independent individuals (see case study 4.1.9). Most of their activities focus on various aspects of entrepreneurship training and accountancy services, often sponsored by donors.

In summary, in comparison to other countries, the NIS is underdeveloped and fragmented.²⁵ The public sector has taken a number of activities and is slowly expanding its capacities. The private sector is hardly organized and does not play a role in innovation and learning through its organizations.

²⁵ See for example Mani (2002) for the comparative perspective, including ASEAN countries.

5 INDUCTIVE ANALYSIS AND CONCLUSIONS

5.1 Learning by Firms in LDCs

Having reviewed the lessons of the case studies, the question that can now be addressed is what is so typical for firms and their environment in developing countries that they deserve special attention when analyzing how firms learn? After all, one could argue that given the depth of the analysis of learning of firms, the basic concepts of cognitive distance, absorptive capacity, organizational scripts, first and second order learning, tacit and explicit knowledge will equally apply to developing countries. However, the particular configuration and relative importance will be different because of a number of factors:

- A wide discrepancy exists between local productive capability and consumer demand leading to (an unequal) differentiation of imports on the one hand and local production on the other in terms of technology and productivity.
- The cognitive distance between firms and potential learning opportunities is too vast to bridge by local entrepreneurs, unless they are well trained and well experienced in other business systems. However, these are few in numbers and are mostly working abroad.
- Most firms are small with the owner as entrepreneur in the driving seat acting as memory, knowledge base, and manager.
- Most enterprises employ rather low-skilled employees without strong bonding with the firm. Where such bonding exists, it works along the lines of family, village or clan.
- Learning and innovation systems not organically grown in response to industry's needs but rather as simulations and surrogates. Competences in potentially helpful organizations are low and their tasks are often too ambitious.
- Through international regulation (WTO), their governments sign intellectual property rights agreements which are not in their favour by closing down a source of cheap knowledge and potential foreign investment.
- Because of poverty, the physical productive environment is poor leading to higher costs and inefficiencies.

- This leads to business system characterized by opportunistic firms, picking the left-over opportunities which are within the reach of their absorptive capacities and are not interesting for other (foreign) investors;
- Opportunities for inter-organizational learning are limited because of shallow backwards and forwards linkages within the industrial system; few dynamic clusters and industrial districts have developed and learning linkages are mostly between local firms and foreign suppliers and purchasers.
- Public innovation and learning systems only play a marginal role in industrial learning due to lack of experience, resources and knowledge itself.
- Business trust is not well-developed and does not extend far beyond traditional trust along the lines of family, village, and clan.
- Social capital is to a great extent defined by traditional values and institutions.

In addition, particular characteristics of the wider environment of the firm will influence the possibilities and incentives for firms to learn. These include (a) the specifics of macroeconomic policies, (b) the role of government and party, (c) the specific nature of the national business system and the national innovation system, including the effectiveness of its public organizations (d) specific historical and geographic conjecture, (e) international determinants in terms of technological change, globalisation, foreign direct investment flows, economic cycles, and (f) donor policies and activities.

Thus, firms find themselves in a rather complex situation. Their main problem is in the field of exploitation: building up their competences in going about their normal business in an often adverse and volatile business environment. They all would benefit from freely available information and know-how, as indeed some 'third world' clusters show (McCormick 1999). Yet as early starters and therefore weak players, they feel the need for protecting whatever they have as specific competences. While potential benefits to learn from each other may be high, many enterprises work in isolation, partly by choice in order to protect themselves, partly because networks are not very well developed.

If there is enough initiative, time and energy, the next step in learning is of a more explorative nature but not in the field of innovation but rather in the field of learning from best practices elsewhere in the field of technology and management.

Some firms may actually innovate, in adapting best practices to their own particular environment. Very few firms, if any, will be involved in new knowledge creation.

As a result of all these factors, learning processes are often incomplete when compared to competitive firms in the international environment. However, when successful, the outcome of knowledge creation in the firm reduces the cognitive distance with its environment and increases its absorptive capacity. This comprises the dynamic feeding back loop: expanded knowledge leading to more learning opportunities. Thus, for catching-up in a dynamic environment, the pace of learning is an important parameter. Since internationally competitive firms are continuously improving through learning and innovation, firms in developing countries face an ever-shifting horizon. They will have to run even to stand still.

5.1.1 The learning process

The whole learning process consists of five components:

- (a) The whole domain of information available, continuously expanding by other agents; this aspect falls outside the scope of this paper.
- (b) A process of filtering and selection in the environment outside the influence of relevant actors (e.g. those relevant within the sphere of interaction with the firms under consideration), also outside the scope of this paper.
- (c) Selection filtering and transformation of information by institutions and organizations within the sphere of interaction, further elaborated below in section 5.1.1.1 on sources of learning.
- (d) Filtering, selection, and transformation of information by actors of the firm, leading to human capital of these actors; this would require much more detailed case study work and is an issue for further research; For small firms, the owner/manager will in most cases be the link between the actors in the environment and employees of the firm. Yet employees may join the firm with knowledge obtained from other firms, formal education or vocational training programmes. In developing countries, these potential sources of learning may not be very well developed as compared to developed countries and more training will have to be provided to the employees by managers of the firm itself.

TABLE 5
Sources of learning

1	Exploiting human capital in firm
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a	Personal educational experience of the entrepreneur
b	Teaching and training of people in the firm by managers and owner;
c	Learning from people in the firm: by demonstration (tacit or non tacit), transforming tacit knowledge into codified knowledge;
d	Learning by people in the firm: formal and informal individual learning, increasing tacit knowledge:
i	Training managers with particular skills
ii	Training of skilled and unskilled labour
iii	Using business contacts for on the job training

2	Market for human capital:
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a	Skilled workers
b	Semi-trained workers
c	Managers
d	With labour coming from:
i	Family
ii	Village
iii	Other firms
iv	Urban labour market
v	Formal education system (university, polytechnics, colleges and schools)

3	Exploiting the input/output market
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a	Buying new/second hand equipment with operation and maintenance training
b	Learning form imported commodities in terms of product characteristics and market shares

4	Exploiting other firms
---	------------------------

a	Contractual arrangements with other firms/investors
i	Engaging local and or foreign business partners
ii	Mergers and acquisitions
b	From similar firms in the form of
i	Spying
ii	Through networking in clusters
iii	Other formal (employers' organizations) and informal contacts (social networks, family, local community, ethnic groups)
c	Buyer/seller arrangements
i	Foreign buyer
ii	Regional buying agency
iii	Domestic buyers
iv	Domestic subcontracting arrangements
1	With local or foreign owned exporters
2	Individual arrangements or through networks and clusters

5	Market for business services
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a	Using consultants
b	Using business development services of government

6	Retaining labour and their knowledge
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a	Wages and salary policy
b	Contracting
c	Social bonding

7	Transferring knowledge from footloose (short term consultants, mobile and career oriented) to bonded labour ('company men', family members)
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a	Through tacit and explicit learning stimulated by the entrepreneur and his/her success to manage the firm as a focussing device;
b	Influence of organizational forms and corporate cultures:
i	Corporate culture stimulating transfer of individual learning in decentralised organization with good up and down communication
ii	Centrally organized: seminars, presentations at various levels
iii	Stimulate team work for transfer of tacit and explicit knowledge

For larger firms, with different management levels, specialization will occur with for example one manager dealing with purchases and supplier relations, another with the output market and customer relations, and the general manager dealing with government and its institutions.

- (e) Knowledge creation in the firm by social interaction within the firm, thereby transforming the human capital into organizational capital (or competences); this involves fitting the information into scripts and adjusting the scripts. How is the individual knowledge selected and intensified through what type of social interaction process in the firm. How is this knowledge transferred into organizational scripts? Are these processes more problematic in third world conditions or are they in fact more simple in the sense that firm structures are more simple (because of size and nature of production)? Is the firm's memory more than the memory of the entrepreneur?

Is it perhaps precisely the problem of opportunistic firms in slowly industrializing countries that firms do not develop into organizations with corporate cultures other than the culture of the owner? Is it possible to differentiate between successful and less successful firm in this respect. Also here further research is required to draw meaningful conclusions.

5.1.1.1 The information environment

Focusing first on the third component of the learning process, the first set of questions become: What are the possible sources of learning and competence building under those circumstances? How can they be described in terms of catching-up and achieving competitive advantage? What are their limitations?

The details of these questions will have to be addressed in a more systematic empirical context. But already quite a large number of sources can be identified as below. To avoid an incomprehensible listing they are provisionally grouped as follows under the headings (a) exploiting human capital in the firm, (b) using the market for human capital, (c) using the product markets for technology, inputs (complementary imports) and output (competing imports), (d) exploiting other firms, and (e) using business development services and consultants.

In addition to these sources of learning, the value of learning is also affected by the ability to retain knowledge and expertise in the firm? After all, not forgetting is an aspect of learning and is included here in the discussion of sources of (sustained) learning, giving rise to two more headings: (f) efforts to retain workers and their knowledge, and finally (g) transferring knowledge from footloose to bonded labour. Table 5 above provides details under each heading.

5.1.1.2 Possible learning problems

Based on the case studies, literature and the author's experience as industrial policy advisor a number of potential learning problems for firms in developing countries might be advanced:

- In countries undergoing rapid changes in their policy environments such as countries in transition or those strongly affected by structural adjustment programmes, the old firms will have difficulties to adjust. They never developed second order scripts to deal with such type of changes.
- On the other hand, new firms that have developed in response to these changes with high second order learning capabilities but without sufficient capability, time or interest to develop adequate first order scripts. Some of them might still be in a process of finding their final form, in other cases the initiating entrepreneur leaves them behind with less able family members (or others) to move on to other business opportunities.
- Well-developed scripts may exist at the individual level in the form of human capital but has not yet been 'upgraded' into organizational scripts. Leading to loss of knowledge when that person leaves the firm.
- Some essential scripts might be missing. For example, lack of proper maintenance and repair activities leads to higher production costs.
- Scripts are incomplete and become rituals without the internal coherence needed for sustained action, flexibility and improvements upon scripts.
- First order scripts may be disjointed across the firm. For example, the scripts required for efficient exploitation of a new technology, say a machine, have an economic dimension, a technical dimension and operational dimension. The first challenge is to get the machine working at optimum quality by fine-tuning and quality control mechanisms. Secondly,

maintenance and repairs have to take place and thirdly, the right mix between quality, depreciation and maintenance efforts has to be chosen for the most economic exploitation of the asset. If the organization does not have scripts to deal with all these aspect in relation to each other, the scripts can be called disjointed.

- Cognitive distances are not sufficiently small within the firm in relation to the often limited absorptive capacities of employees.
- Lack of social capital within the firm may hinder reduction of cognitive distance. Particular authoritarian management attitudes that might prevail in authoritarian societies are not well-suited for creative motivation. Such social norms might become social liabilities instead of social capital.
- Cognitive distance between what is actually required for competitive performance of the firm and actual practice is large. This leads to inefficiencies and firms' closures particularly with further liberalization of trade regimes. In many sectors firms just do not exist because of this large discrepancy.

For organizational scripts to develop fully organizational social capital is required. Since organizational scripts constitute the running of the firm, including its physical and human assets, this reveals at firm level the importance of the interaction between social capital, learning and economic exploitation.

5.2 Public-private cooperation

The impact of Public Innovation and Learning System is limited and seems to work mostly through the formal education system and specifically through the faculty of engineering, some training courses by CIRD, and NGO sponsored training courses carried out by local consultancy firms. As a result, most firms relied on what the market and their own networks provided.

This may have several reasons. First, the PILS is still in an embryonic phase and form with organizations building up their expertise. Second, the pace at which the organizations in PILS improve their capability seems to be rather slow. The may, in turn, be caused by limited resources, but then it becomes a matter of priorities. Third, the various responsibilities are not well defined and much time is still spent on regulations and policies and less on actual extension to enterprises. Fourth, and

perhaps most importantly, the content of the extension to enterprises may not be what they want.

Ways to improve the type of assistance and the content of the message is by involving enterprises more in the definition of the activities of the organizations within PILS and to specialize perhaps more on specific sectors where one can expect common interests that can be served by a public organization. After all, successful countries have made use of what the Resource Leverage Model has labelled a national economic innovation and learning system with a tight integration of private and public sector. This tight integration still has to be achieved in Lao PDR.

This tighter integration of PILS and the business sector involves the expansion of inter-organizational learning. However, there are a number of differences between this case of inter-organizational learning and the inter-organizational learning model described in table 3 on page 21. In the present case, the learning is between institutions of a different nature for different purposes. Firms learn to become individually competitive while PILS aims to make a whole (sub-) sector competitive. The type of competences greatly differs with PILS being in extension and the firms in production. Yet, the information exchange is about learning in exploitation (doing better what is already done) and exploration (finding new things to do), the key property of the inter-organization learning model.

Thus, because of the public nature of PILS, the scope is limited to generic information and cannot be used to enhance the competitive advantage of one firm. Therefore the specific role of the elements in the PILS is to reduce the cognitive distance between the information (on technology and production systems) that is available in the wider environment and the enterprises in order to enable the enterprises to expand their potential scope for exploitation and exploration.

Also organizations of the PILS will have to expand their potential scope for exploitation and exploration in two senses. In the first sense, at the level of the organizations in the PILS, they will have to improve what they are already doing, e.g. exploitation, while at the same time they are in a process to find their orientation and therefore are involved in exploration. In the second sense, the content of their activities, their actual extension messages deals with exploitation and exploration at firm level. At that level, there is a direct joint interest between (elements of) PILS and the firm, by being involved or interested in the same type of activities, although from different perspectives.

Specifically at this level and because of the different perspectives, firms must be involved in these processes in defining the direction of the search. For the PILS to function effectively, firms have to be able to ensure that their needs are well catered for by the PILS. This implies a certain amount of influence of firms in (a) the setting the agenda for PILS as well as (b) sharing information with PILS on their specific requirements (in terms of the inter-organizational model: opening-up), and (c) providing feedback on improvements to be made in the joint system.

The environment in which this joint learning occurs provides for further complexities and opportunities. Firms already cooperate with others firms (similar firms, buyers, sellers), while organizations in PILS are embedded in a network of government and donor relations, responsible for other tasks not directly geared towards firm learning, and with a vast pool of comparative experience at hand derived from neighbouring countries and, more generally, from successfully industrializing countries.

Both firms and organizations of the PILS are thus involved in other joint learning platforms. For the private sector, these have arisen from the needs of the firms and the opportunities of their environment. In contrast, for the organizations of PILS, these platforms are provided by the wider institutional environment and are opportunity-driven rather than needs-driven and therefore not necessarily focussed on and coordinated for the requirements of the industrial sector.²⁶

One type of joint learning platform currently *en vogue* for industrial policy in developing countries is provided by the learning that takes place in (successful) industrial district and clusters. A crucial element determining success is sufficient common interest of entrepreneurs in joint action. Often this common interest is provided by an export market focus, which, given its size in relation to the local supply capacity, does not lead to competition between local firms. On the contrary, precisely the limited supply capacity in relation to potential demand can act as a powerful incentive for firms to cooperate. A joint (public-private) search for potential areas of private-private in combination with private-public cooperation could provide some joint learning opportunities. This must be grounded in (a) good understanding of

²⁶ In some way, there is almost always a need of someone, somewhere, although public sector decision-making processes can be non-rational altogether: they just happen (Valk and Sibanda 1986). Here, it is meant as not need-driven from the perspective of coordinated industrial development.

how firms are embedded in the market (b) how they learn at present, (c) what common interests they precisely have and perceive as such, and (d) the capability of PILS to deliver support. The many failures of dynamic cluster development warn against too much optimism here.

Given the limited human and financial resources, choices will have to be made in terms of sectors and services delivered. For example, rather than developing a full system of standards for Lao DPR, the standards of neighbouring countries could be adopted and the efforts of the standard organization could be directed at quality extension to firms with common interests in specific sectors starting with some sectors only and moving from one sector to another. Quality extension would consist of information on standards relevant to the specific group of industries chosen, providing export market information related to quality requirements, organizing testing facilities, supplying information on technology, arranging for financing mechanisms for upgrading and innovation, and finally institutionalization of these elements and mechanisms as much as possible in the private sector.

5.3 Further Research

The case studies are by themselves not sufficient to proceed with more concrete action oriented conclusions. Further and more systematic research will be required, carried out as joint activity between private and public sector.

On the one hand, more detailed insights about learning processes could be obtained with more in depth case studies of individual firms. The case studies have showed the importance of several sources of learning identified in TABLE 1. More systematic research would provide a more representative picture. The nature of the interaction and the types and limitations of the knowledge obtained, as influenced by the source of learning would be an interesting line of research.

Processes by which human capital is transformed into organizational capital would form another line of research (Section 5.1.1). In the case studies, the overriding importance for the firm of one single individual in terms of knowledge and learning shows that organizational learning has not gone very deep. Size, sector and complexity of the organization may provide one line of explanation.

The learning problems that might exist in firms identified in section 5.1.1.2 could be traced out in much more detail. In addition, questions can be pursued about what types of negative feedback loops exist within the firm to prevent learning to

happen (Argyris and Schön 1978). The relationship of this question to issues of local culture (social capital), local management systems, the national business system, and PILS could be much further elaborated.

On the other hand, specific and practical research questions could address which firms in which sectors and activities share enough common interest to develop what type of joint practices and what role could government play in supporting this. This would be a very important field for assisting Government in fine-tuning capabilities and approaches of its PILS to the opportunities and needs of the private sector.

Finally, further work is needed to move towards an effective and efficient PILS. Some of this work may be in the form of research, but other efforts are required in policy formulation and particularly in firm and clear policy decision-making.

STATISTICAL APPENDIX

TABLE 6
Macroeconomic profile Lao PDR

Indicators	1992	1993	1994	1995	1996	1997	1998	1999	2000
GDP:									
Real GDP per capita (US\$)*	271	297	336	378	395	360	259	287	317
Real GDP growth per year	7.0	5.9	8.1	7.1	6.9	7.0	4.0	7.3	5.8
GDP by sector (%):									
Agriculture	58.0	56.3	56.4	54.3	52.2	52.2	51.8	52.2	51.8
Industry	16.7	17.4	17.8	18.8	20.6	20.8	21.9	22.0	22.6
Services	23.9	24.3	23.7	24.4	24.8	25.0	25.4	25.2	25.0
Sectoral growth rates:									
Agriculture	8.3	2.7	8.3	3.1	2.3	7.0	3.1	8.2	4.9
Industry	7.5	10.3	10.7	13.1	17.3	8.1	9.2	8.0	8.5
Services	3.6	7.7	5.5	10.3	8.5	7.5	5.5	6.7	4.9
Annual inflation	9.9	6.3	6.0	19.4	11.3	26.4	87.4	134.0	23.0
Exchange rate	720	716	720	819	926	1259	3296	7108	7845
ODA (mln US\$)	167	228	234	303	417	389	302	355	226
Government budget (% GDP):									
GDP:									
Revenue	10.7	11.9	12.3	12.2	13.0	11.3	9.8	10.6	13.3
Expenditure	20.7	17.9	23.8	21.9	22.1	21.9	23.6	20.6	21.7
Grants			6.3	5.5	3.5	3.4	5.3	6.0	3.7
Overall balance			-5.2	-4.2	-5.6	-7.2	-8.5	-4.0	-4.6
Domestic financing			0.5	-0.4	-1.1	1.6	2.5	-0.6	-1.2
Foreign financing	0.8	4.5	4.7	4.6	6.7	5.6	6.0	4.6	5.8
Investments (%GDP):									
Public		9	12	11	12	12	7	3	2
Private	0.8	4.5	3.9	5.4	8.6	21.8	21.1	3.7	
M-X	11.4	14.4	23.0	16.1	19.9	19.2	16.8	17.4	11.8
Interest rate (average, on short term loans)		26.0	24.0	28.0	26.0	23.0	25.0	27.0	25.0
Gross domestic savings									
Public				11.6	12.0	11.4	12.7	16.4	14.6
Private							11.0	11.9	10.0
							1.7	4.5	4.6

(*) The figures for per capita real GDP do not tally with the real GDP growth figures since the former were derived from estimates of GDP in US\$'s and the latter from constant price series expressed in Kips.

Source: Extracted from UNDP (2002)

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