

New economy in old sectors: Methodology and evidences of two studies on production networks in Argentina

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This presentation is based on the paper “New economy in old sector: methodology and evidences coming from two production networks in Argentina”, by Facundo Albornoz (Universidad de Birmingham-Delta), Darío Milesi (UNGS-Universidad Complutense de Madrid) and Gabriel Yoguel

Background of the research team

- ✦ Production networks. Linkages, innovation process and social management technologies: A methodological approach applied to the Volkswagen case in Argentina, Danish Research Unit Industrial Dynamics, Electronic papers, 2000, www.business.auc.dk, Yoguel, Novick y Marin
- ✦ Redes productivas. Un estudio comparativo entre dos cadenas de producción en la Argentina, International conference Cebremap-ILAS, www.conference.hpg.com.br, Novick, Yoguel y Milesi, 2002
- ✦ Adaptación de modelos productivos en países emergentes. EL caso de la Industria automotriz en Argentina, Novick, Catalano, Yoguel, Albornoz, Cuadernos del CENDES, Nro , Venezuela, 2003
- ✦ Entorno productivo y ventajas competitivas. El caso de una trama siderúrgica, UNGS, Informe de investigación Nro 15, Yoguel, Milesi, Novick, 2003 www.littec.org

Main objectives

- ✦ Develop a uniform methodology capturing part of knowledge generation and circulation inside a production network
- ✦ Discuss whether or not differences in the network organization are useful to understand differences in their performance

Theoretical Framework

- ✦ Production network: Economic space for building competencies. It includes a core firm, its customers & suppliers and their interrelationships derived from purchases and sales It involves:
 - ✦ Flows of goods and services in a stable and long run relationship
 - ✦ Interchange and accumulation of tacit and codified knowledge.
 - ✦ Synergies of learning processes
 - ✦ Different firm organization than in clusters and global commodity chains
 - ✦ Quasi rents and special market behavior

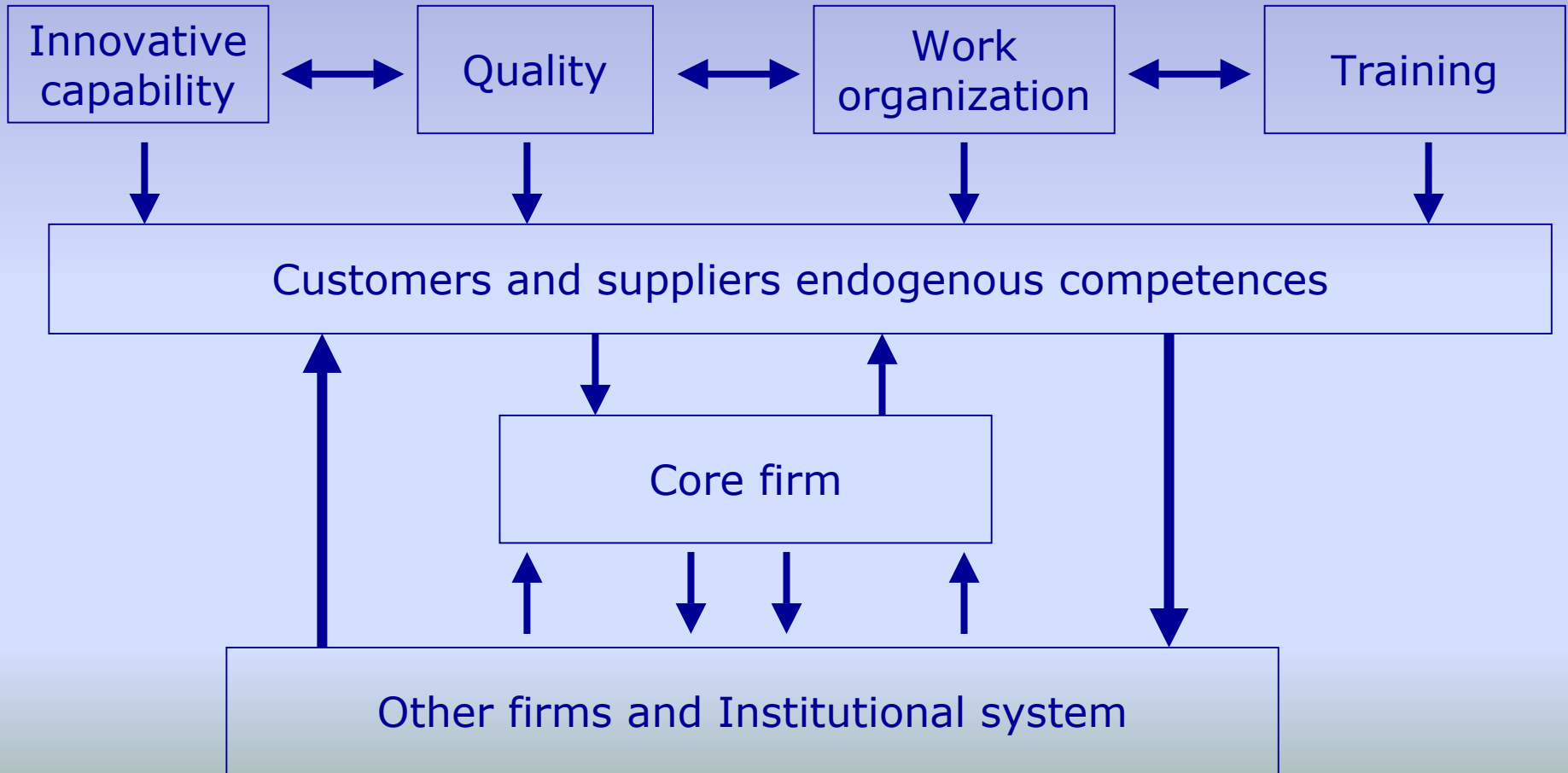
Theoretical Framework (2)

- ✦ PNW as an epistemic community, sharing the codified and disarticulated language and knowledge difficult to be understood by agents not belonging to it.
- ✦ The learning process depends on:
 - ✦ Degree of development of the core and suppliers' endogenous competence
 - ✦ Contracts
 - ✦ The circulation of information and tacit and codified knowledge along the network (Cognitive cycle (Nonaka and Takeuchi))
 - ✦ Interaction with companies and institutions related to firm's environment

Key Dimensions explaining the development of competences in production networks

- ✦ Endogenous competence
 - ✦ Innovation capability
 - ✦ Quality assurance
 - ✦ Work organization
 - ✦ Training
- ✦ Interaction inside PNW: suppliers and core firm
 - ✦ Contracts
 - ✦ Formal and Informal technical assistance
- ✦ Interaction outside PNW: other firms and institutions
 - ✦ Formal and informal cooperation
 - ✦ Linkages with technical institutions

Methodological Approach



Benchmark knowledge production network (KPNW)

- ✦ i) High endogenous capabilities of the firms in each dimension
- ✦ ii) Strong linkages between dimensions determining endogenous competences
- ✦ iii) Strong linkages between suppliers and core firms
- ✦ iv) Strong linkages with agents not belonging to the PNW
- ✦ v) A high level of interaction between suppliers and core firm with institutional system

Endogenous competences and intranetwork linkage style

		Intranetwork linkage style	
		Weak	Strong
Endogenous competences	Low	Marginal role	Core firm assistance
	High	Strong potential function	Virtuous bi-directional relationship

APNW and SPNW: main characteristics

Autonomy	Scarce	Very high
Market orientation	Regional	International
Suppliers in the sample	75	50
Year of the sample	2000	2001
Period analysed	1995-2000	1995-2001
Ownership	FDI: newcomers and acquisitions	Both Big nationals firms and FDI since 90 's
Size	Medium and Big firms	Medium firms
Dynamics in the market	Very negative trends since 1999	Positive, core competences and exports

Figure 2. Endogenous competencies: comparison between APNW and SPNW

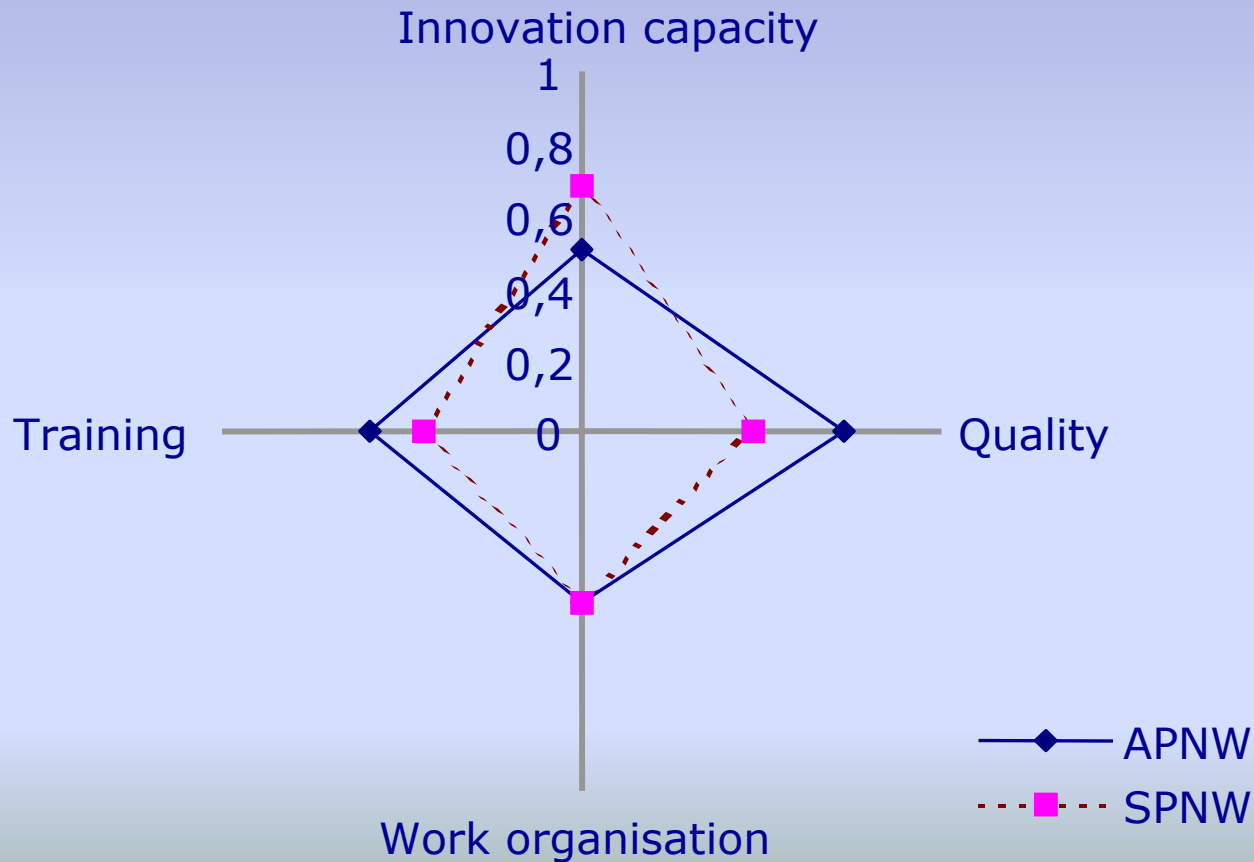


Figure 3. Technical support received by suppliers: PNW and SPNW

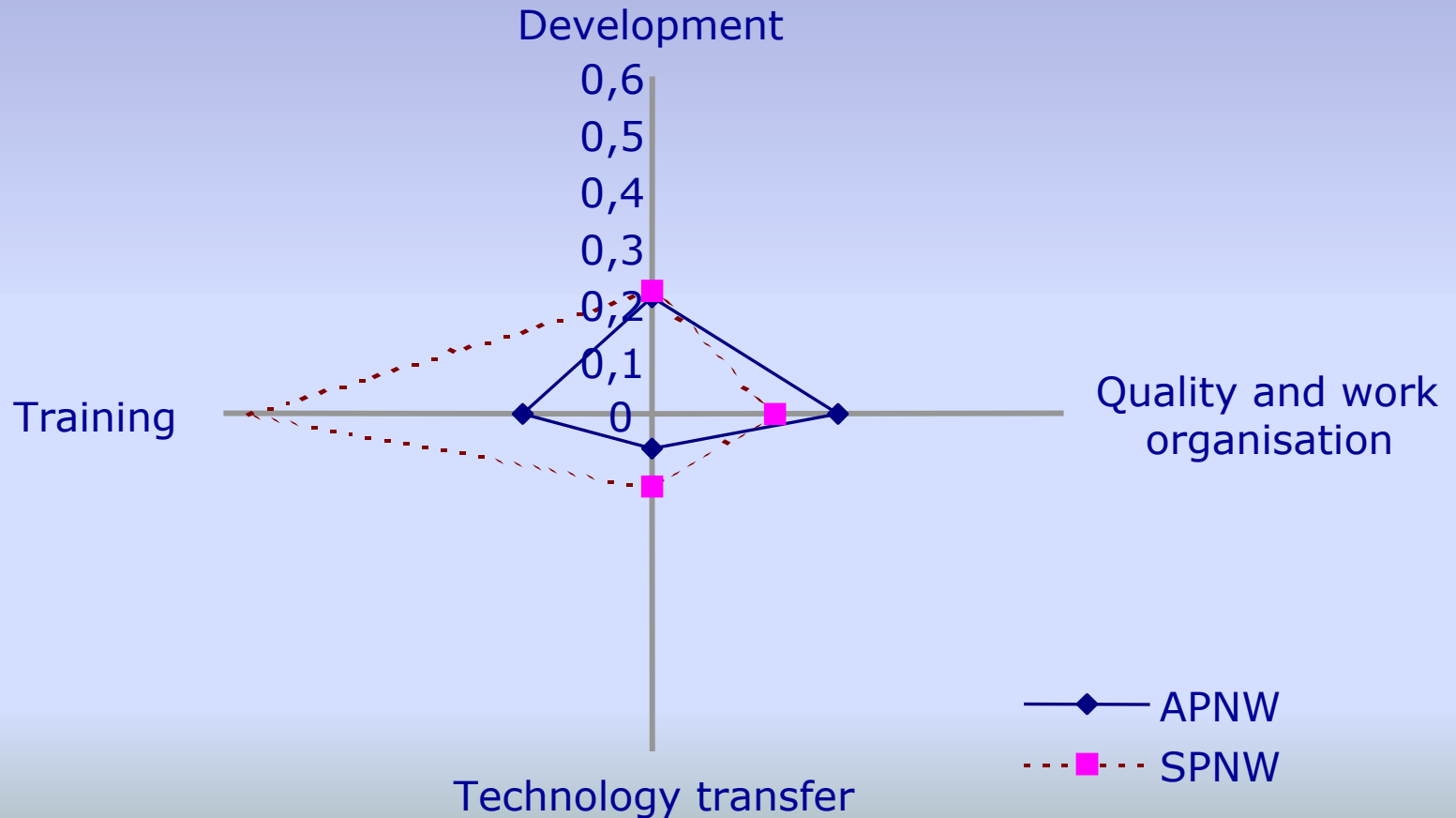
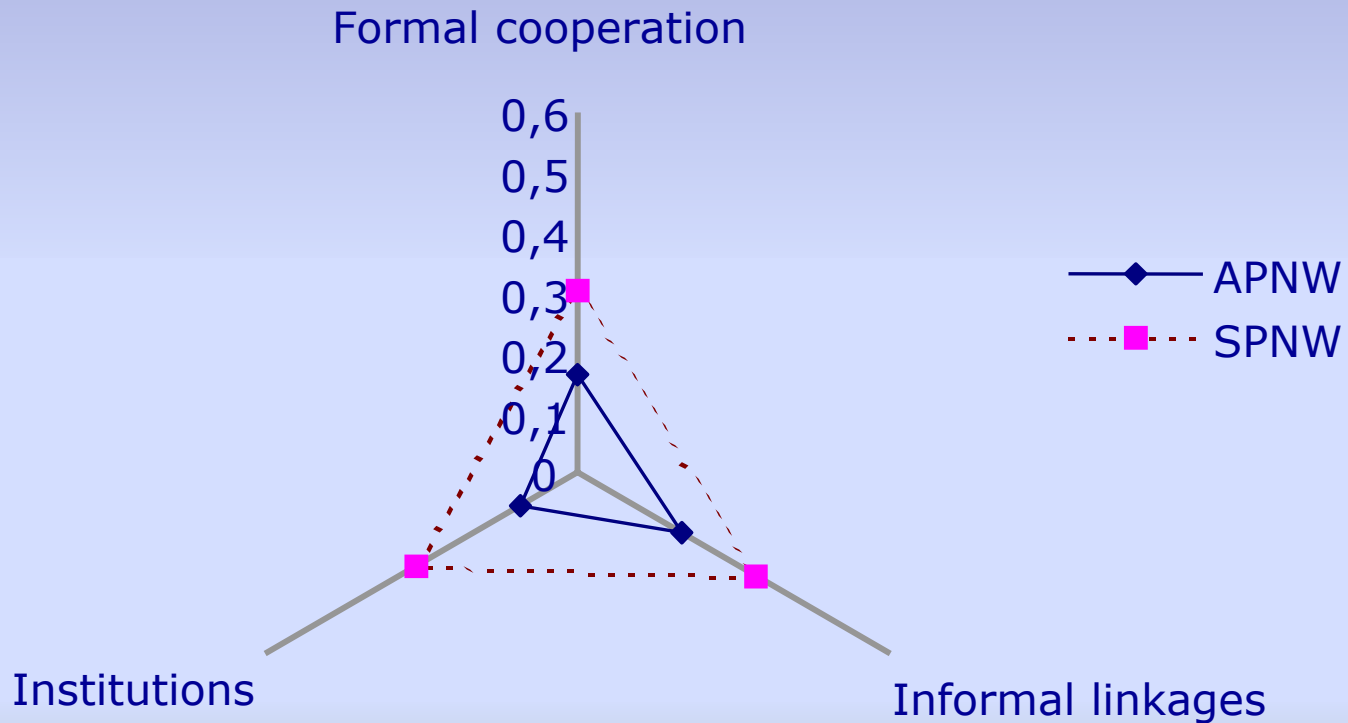


Figure 4. Linkages outside the network: APNW and SPNW



Conditions	PKNW	SPNW (1)	APNW (2)
i) Factors determining endogenous competencies	High	Medium	Medium
ii) Association between factors determining endogenous competencies	High	Medium	Low
iii) Linkages inside the PNW	High	Med-Low	Low
iv) Other linkages (institutions and other firms)	High	Medium	Low
v) Association between endogenous competencies and linkages inside the PNW	High	Medium	Low
Source	Theoretical	Econometric model and averages	Econometric model and averages

$$(1.a.) \mathbf{IC}_i = c + \alpha_1 \text{sales}_i + \alpha_2 \text{FDI}_i + \beta_1 \text{workorg}_i + \beta_2 \text{training}_i + \beta_3 \text{quality}_i + \beta_4 \text{EMI}_i + \beta_5 \mathbf{LS}_i$$

$$(2.a.) \mathbf{LS}_i = \alpha_1 \text{sales}_i + \alpha_2 \text{FDI}_i + \beta_1 \text{workorg}_i + \beta_2 \text{training}_i + \beta_3 \text{quality}_i + \beta_4 \text{inno}_i + \gamma \mathbf{PNW}_i$$

Conclusions

- ✦ The methodology allows to determine to what degree the interaction of the agents belonging to the analyzed production networks contribute to the generation of learning processes.
- ✦ The identification of such processes is vital to capture the way in which the new economy spreads into the old sectors. The importance of codified and tacit knowledge.
- Both networks are far away from the benchmark KPNW.
- However, the generation and circulation of knowledge in the iron and steel PNW is considerably more intense than in the automobile sector.

Conclusions (2)

- ✚ The iron and steel PNW is the international core of a global network, while the automotive one is a regional network controlled by a global chain.
- If the local component of a global network mainly benefits from static competitive advantage the generation of learning process can be less relevant, and therefore the evolution path of the local network can be blocked, concentrating the critical learning on the international core of the network
- The development of local learning process and the achievement of DCA based on knowledge require as a necessary but not sufficient condition a productive network with local competence strategically associated to the global network it belongs to