SESSION #9
FOCUSING ON SUPPLY CHAIN MARKETS

This session?

You can expect five key takeaways

- Basic introduction to concepts, tools, and insights to deal with supply chain issues

- Understanding pharmaceutical supply chains in developed and developing countries

- Examples and cases of market based supply chain improvement

Caveats

- We will strive for simplicity and attempt to boil messy supply chain phenomena down to some basic logical principles.

- On occasions the session will require you to abstract from the immediate problem at hand
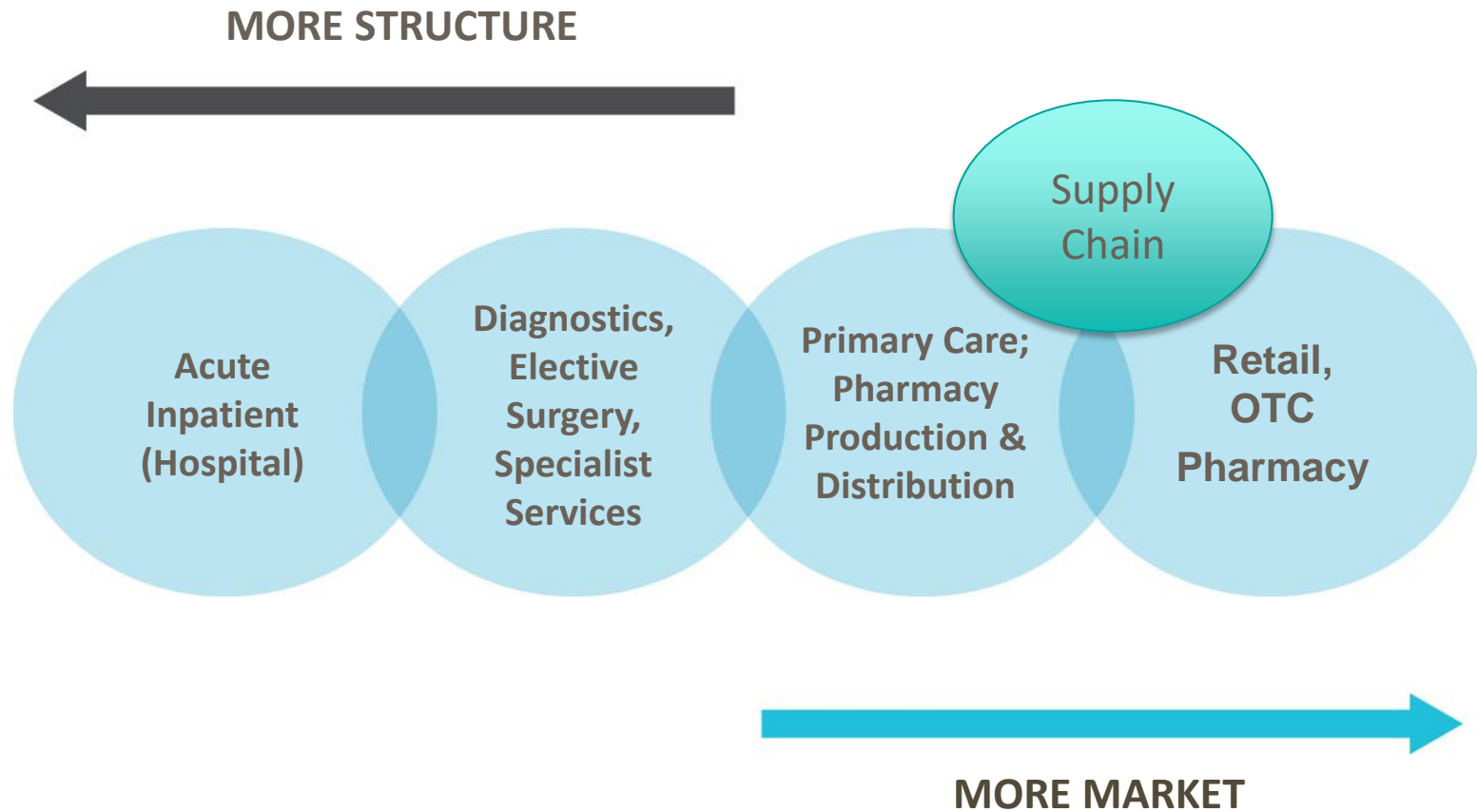
Session overview

- Supply chain background

- Supply chain in OECD countries

- Supply chain in developing countries

- Policy tools for improving supply chains

- Sweden pharmaceutical distribution regulation case
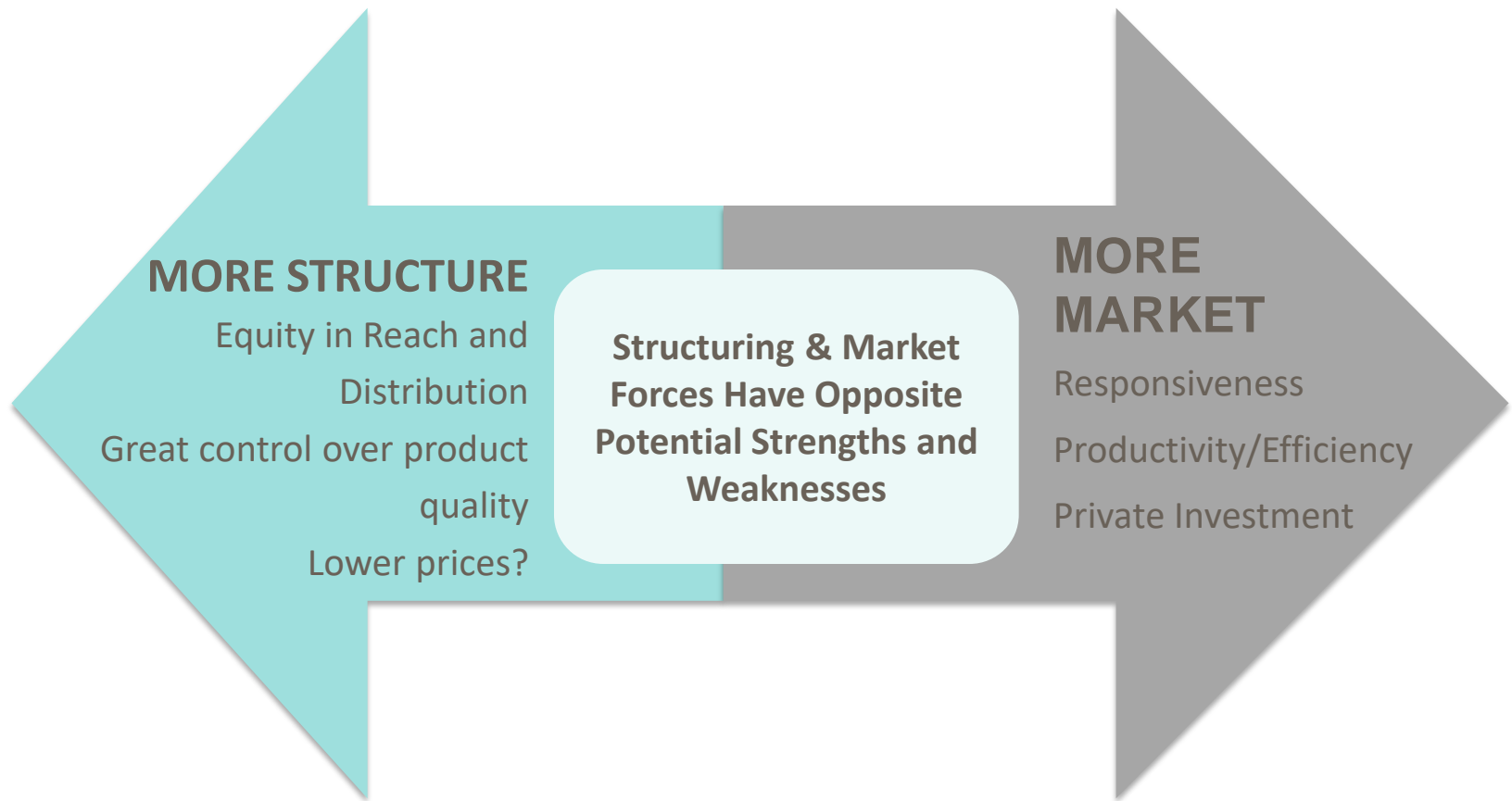
- Tanzania case discussion

Why worry about supply chains?

- **Supply chain**: A system of organizations, people, technology, activities, information and resources involved in making a product reach the customer

- Supply chains are the backbone of the health system- frequent stock-outs and high costs of commodity delivery can make health programs unsustainable

- Supply chain also plays a crucial role in obtaining information about coverage, needs, and many other information sets crucial for planning

- Supply chain management is a well developed scientific discipline

- Supply chains are intrinsically suited to be run by market actors- require agility & flexibility

Supply chains in the structure vs. market spectrum

MORE STRUCTURE

Acute Inpatient (Hospital)

Diagnostics, Elective Surgery, Specialist Services

Primary Care; Pharmacy Production & Distribution

Supply Chain

Retail, OTC Pharmacy

MORE MARKET

Supply Chains and "the more market vs. more structure" tradeoff

MORE STRUCTURE

Equity in Reach and Distribution

Great control over product quality

Lower prices?

Structuring & Market Forces Have Opposite Potential Strengths and Weaknesses

MORE MARKET

Responsiveness

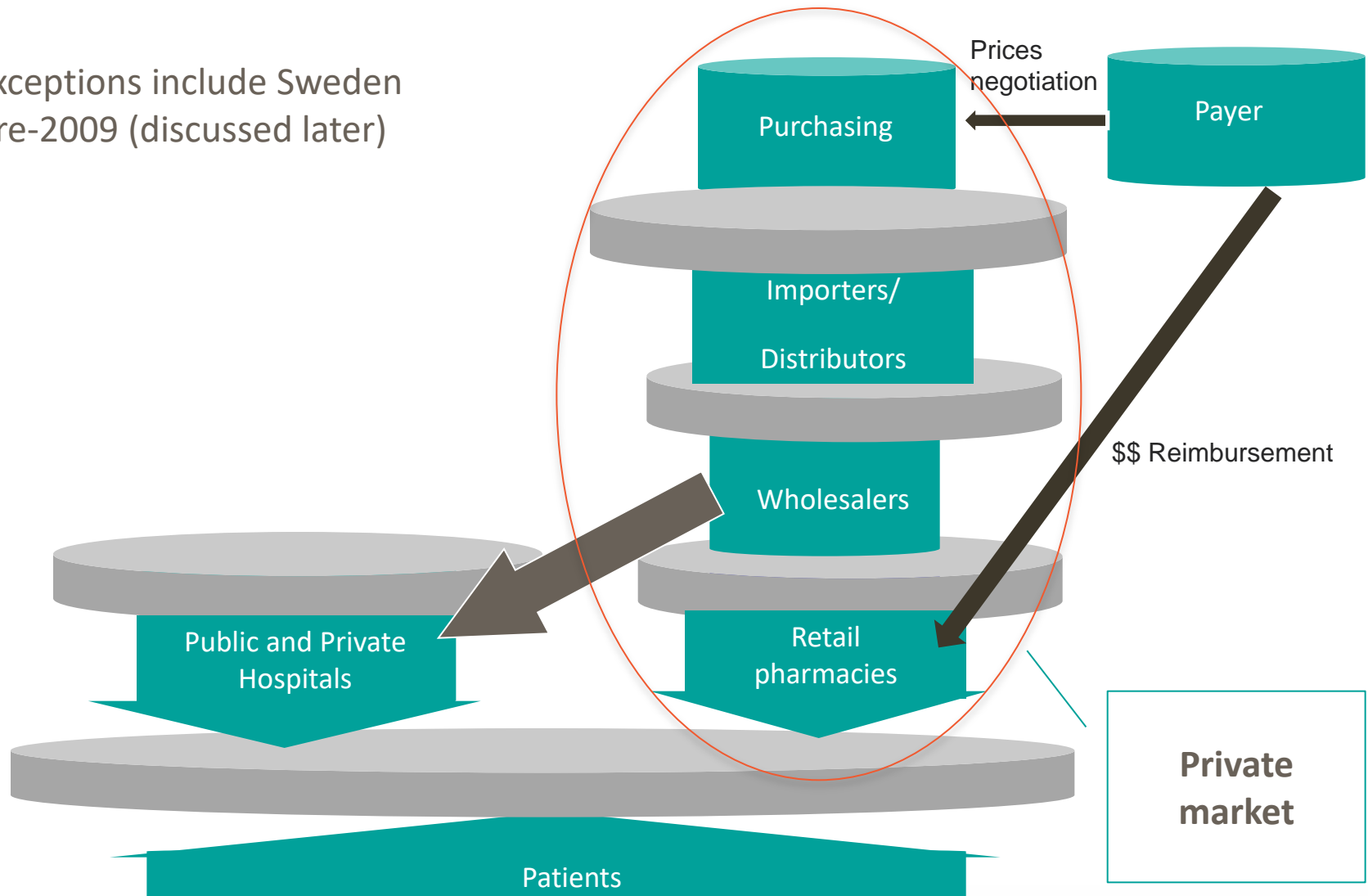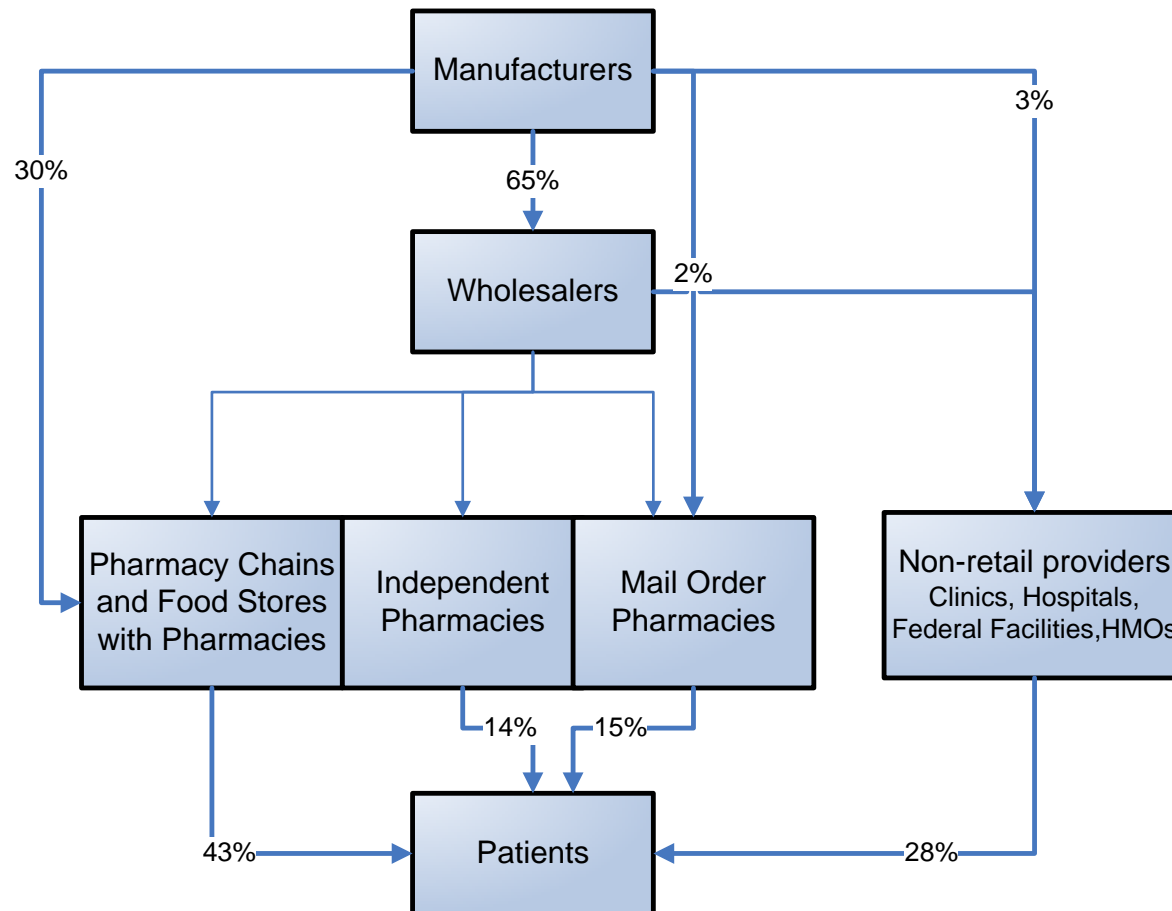Productivity/Efficiency

Private Investment

HEALTH PRODUCT SUPPLY CHAINS in OECD COUNTRIES

Health product distribution structure in OECD* countries

*Exceptions include Sweden pre-2009 (discussed later)

Prices negotiation

Payer

Purchasing

Importers/ Distributors

$$ Reimbursement

Wholesalers

Public and Private Hospitals

Retail pharmacies

Private market

Patients

US healthcare supply chain

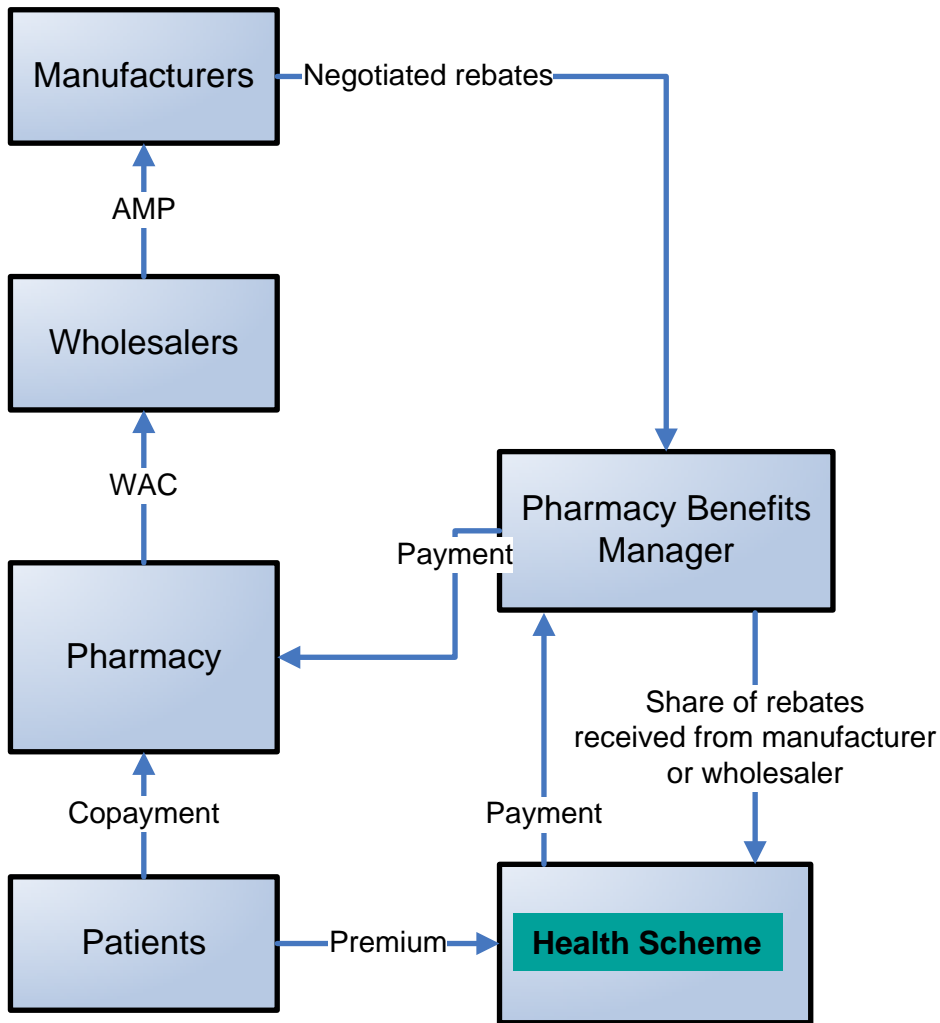3 major full line wholesalers control 80% of the market

Approximately 57,490 pharmacies. 5-6 major national chains

Once a day (or more) deliveries to each pharmacy

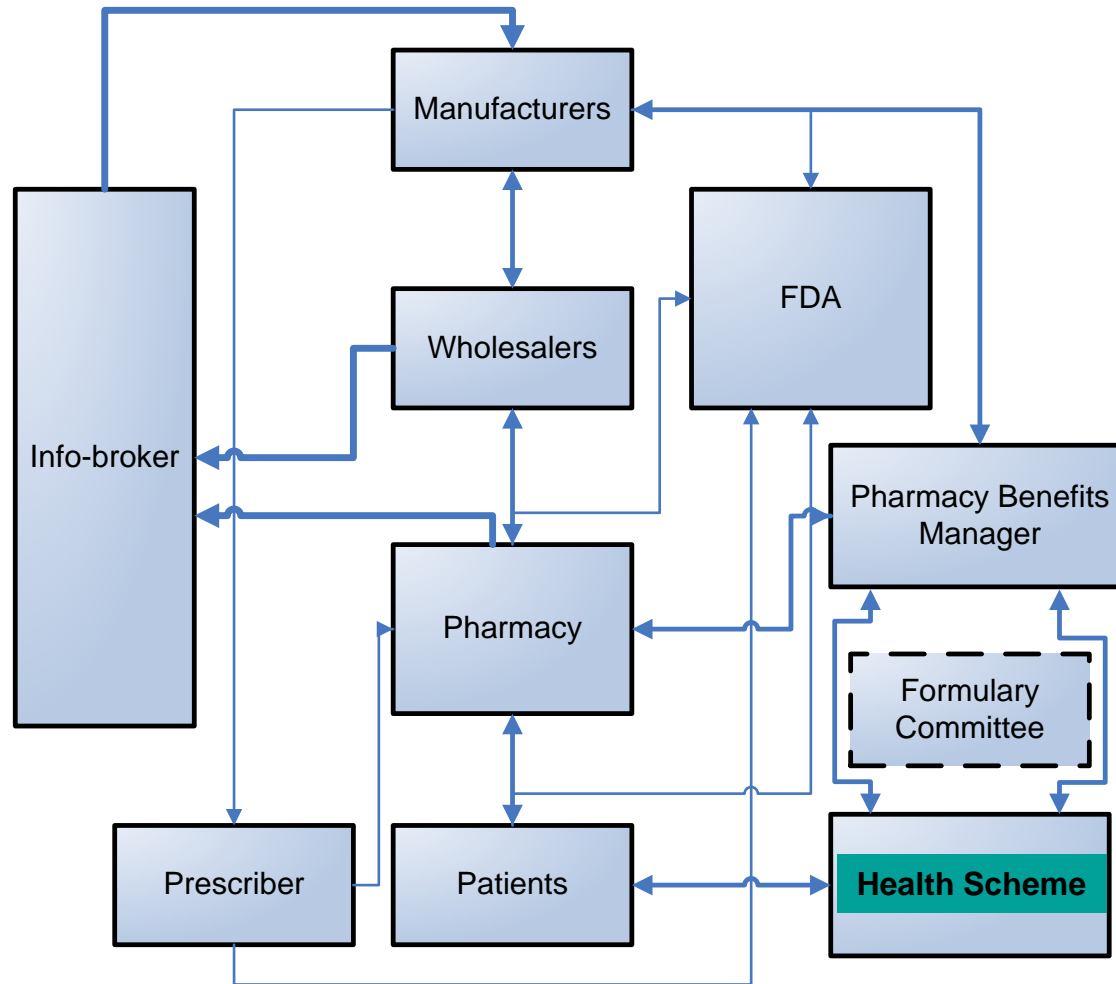26% out-of-pocket expenditure on medicines

Source: GAO Report 2006
Author's analysis

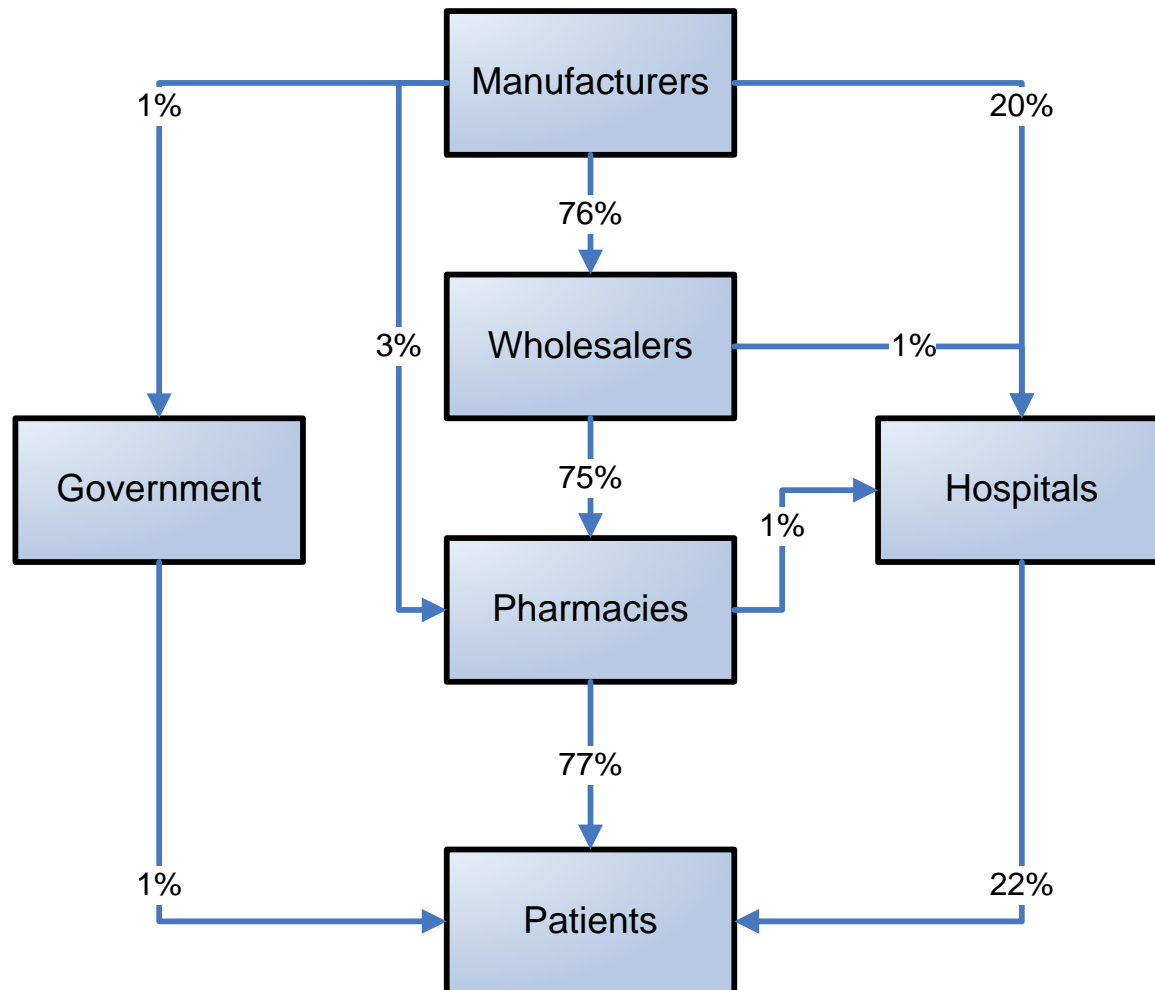# US healthcare supply chain: Financial flows

Source: GAO Report 2006
Author's analysis

US healthcare supply chain: Information flows

Source: Author's analysis

Spain healthcare supply chain: Physical flows

Manufacturers

1%

20%

76%

Wholesalers

3%

1%

Government

75%

Hospitals

1%

Pharmacies

77%

1%

22%

Patients

106 wholesalers. Regional wholesalers (55 companies) command the largest part of the market share at 58%. Five big wholesalers control less than 40%

Many wholesalers are pharmacy cooperatives

Regulated margins
Wholesale margin= 9.6% for drugs costing <€78.34 and a fixed fee for drugs exceeding that price
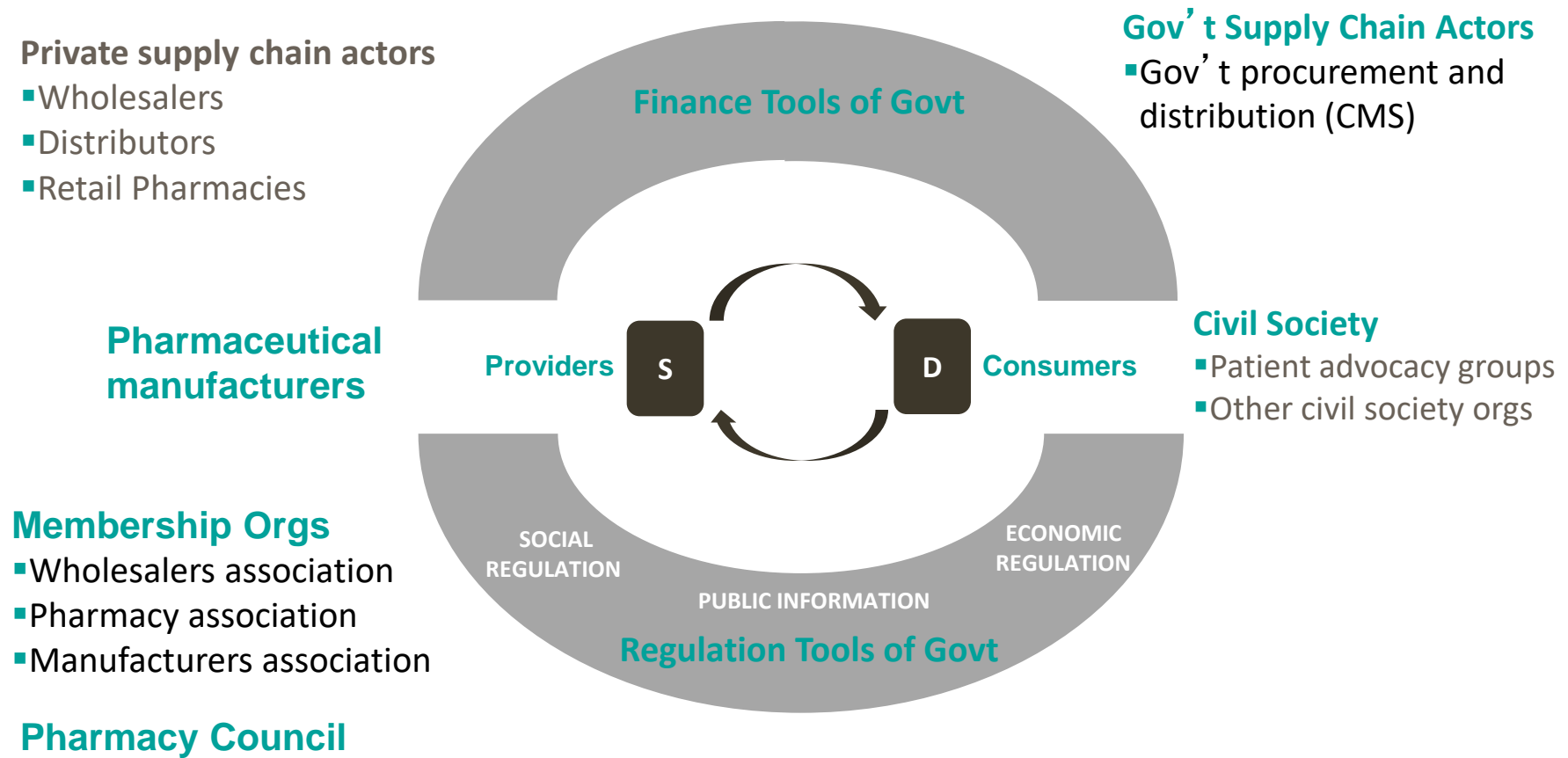
Retail margin= 27.9% for drugs costing < € 91.63 and a fixed fee for drugs exceeding that price

21,000 community pharmacies. Deliveries to pharmacies are made 2-3 times a day from wholesalers. IT tool named BOT PLUS in every pharmacy

Many differences in OECD supply chains for medicines.
One commonality:

Government plays multiple supporting, financing & rule defining functions while private actors manage transport, distribution (and retail)

Private supply chain actors
- Wholesalers
- Distributors
- Retail Pharmacies

Pharmaceutical manufacturers

Membership Orgs
- Wholesalers association
- Pharmacy association
- Manufacturers association

Pharmacy Council

Finance Tools of Govt

Gov't Supply Chain Actors
- Gov't procurement and distribution (CMS)

Providers S D Consumers

Civil Society
- Patient advocacy groups
- Other civil society orgs

SOCIAL REGULATION

ECONOMIC REGULATION

PUBLIC INFORMATION

Regulation Tools of Govt

Comparing the supply chains

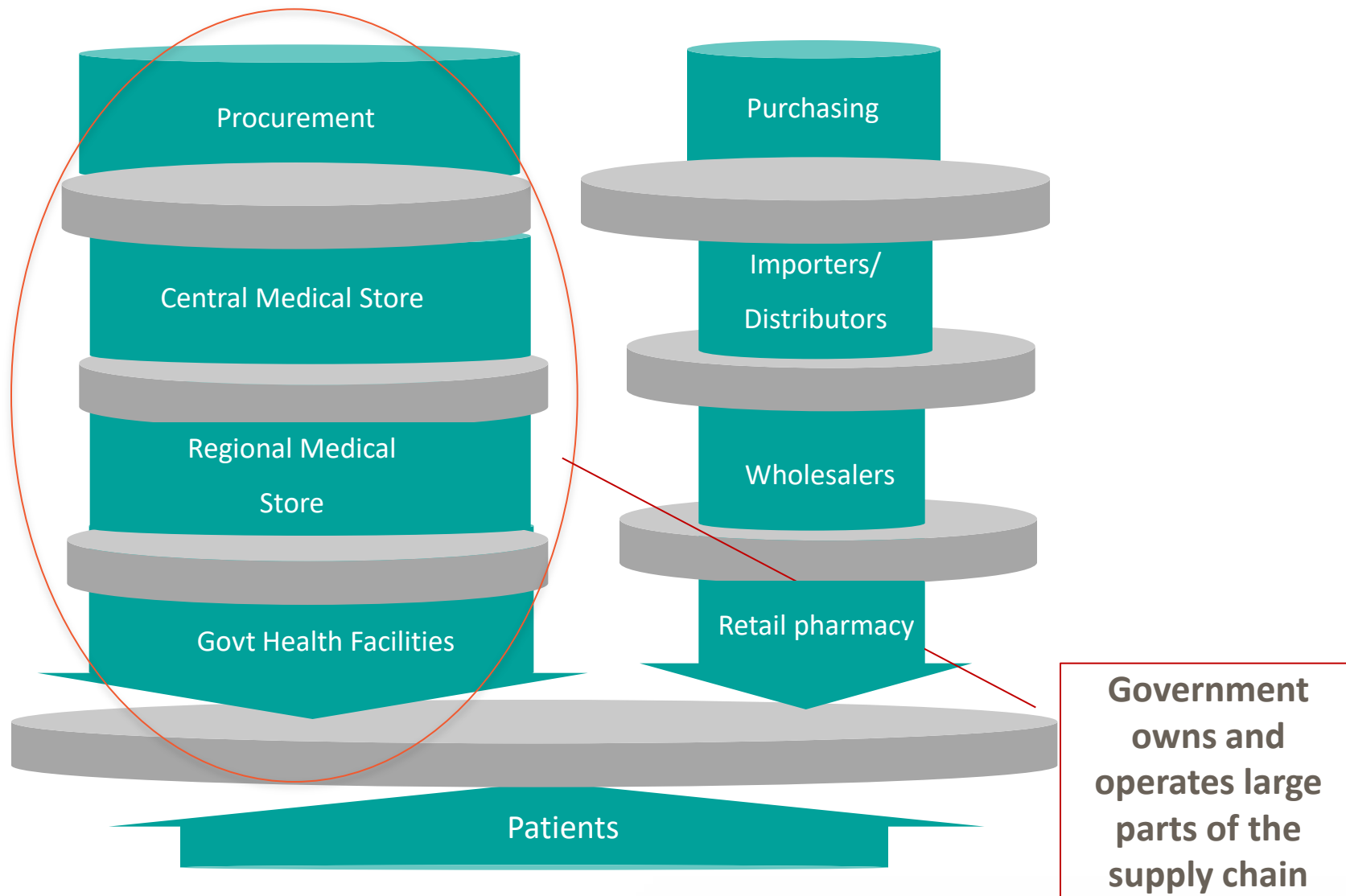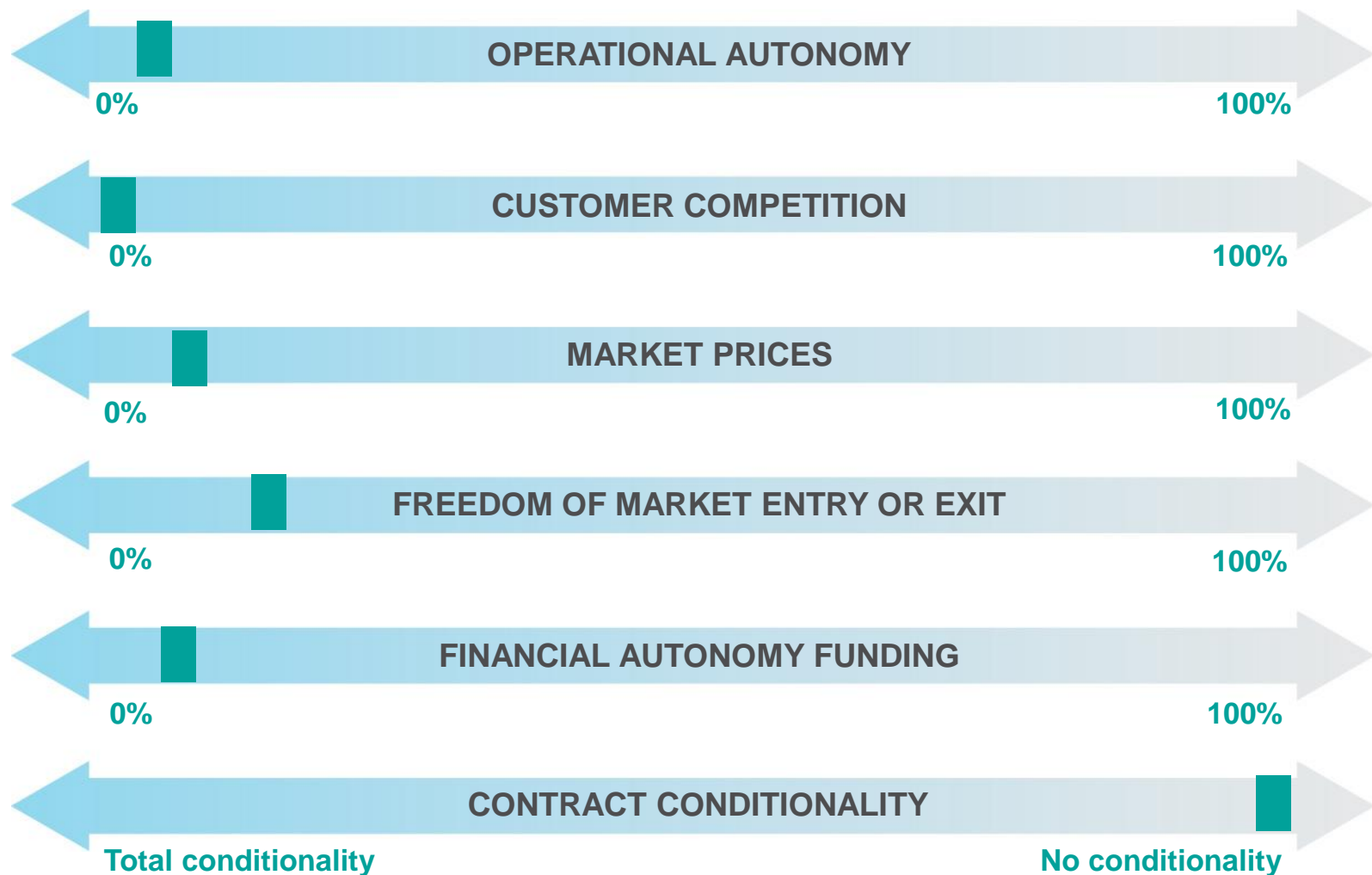| Factor	OECD	Developing country
Regulatory	▪Strong and well-defined regulatory structure ▪Good ability to enforce regulations.	▪Weak, fragmented regulatory structures ▪Poor ability to enforce regulation
Distribution systems	▪Few large distributors with nationwide coverage ▪Relatively low markups in distribution ▪Wholesale and retail markup regulation in many	▪Very fragmented private distribution market ▪Govt quasi-monopoly on distribution ▪Few or none with nationwide coverage ▪High markups in distribution
Information and communication across supply chain actors	▪Well developed ▪In some instances facilitated by government	▪Skeletally developed

Source: Adapted from Yadav and Smith 2012

Government run medicine supply chains in developing countries

Pharmaceutical distribution in most developing countries

Procurement

Central Medical Store

Regional Medical Store

Govt Health Facilities

Purchasing

Importers/ Distributors

Wholesalers

Retail pharmacy

Patients

Government owns and operates large parts of the supply chain

Pharmaceutical distribution in most developing countries

OPERATIONAL AUTONOMY

0% — 100%

CUSTOMER COMPETITION

0% — 100%

MARKET PRICES

0% — 100%

FREEDOM OF MARKET ENTRY OR EXIT

0% — 100%

FINANCIAL AUTONOMY FUNDING

0% — 100%

CONTRACT CONDITIONALITY

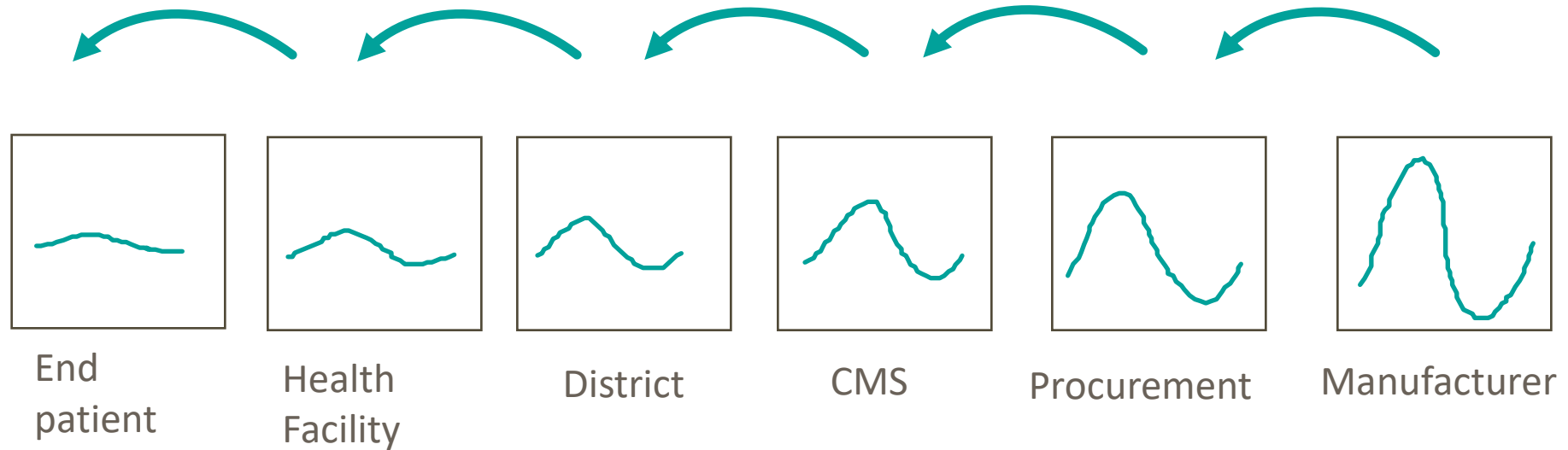Total conditionality — No conditionality

Challenges in govt owned and operated supply chains

Typical structure. May not hold for all countries and programs. Corruption and infrastructure issues are additional structural barriers

Suppliers → Ministry of Health → Distribution → Clinics

MoF or other financing source → Ministry of Health

Uncertainties in timing of funds disbursement from MoF or external source

- State monopoly on distribution
- Creates weak incentives
- Poor information capture and flows for accountability

- Delays in procurement due to archaic procurement processes
- Poor quantification and planning
- Long supply lead times

- Weak staff capacity to manage inventory
- Poor or no consumption tracking

Lack of *incentives* and *information* flows throughout the system

The corrupting influence of distribution structure complexity

End patient → Health Facility → District → CMS → Procurement → Manufacturer

Bull-whip effect: Amplification in demand variability as it goes upstream in a multi tiered distribution system

Fewer layers in the distribution system help remain in sync with actual demand

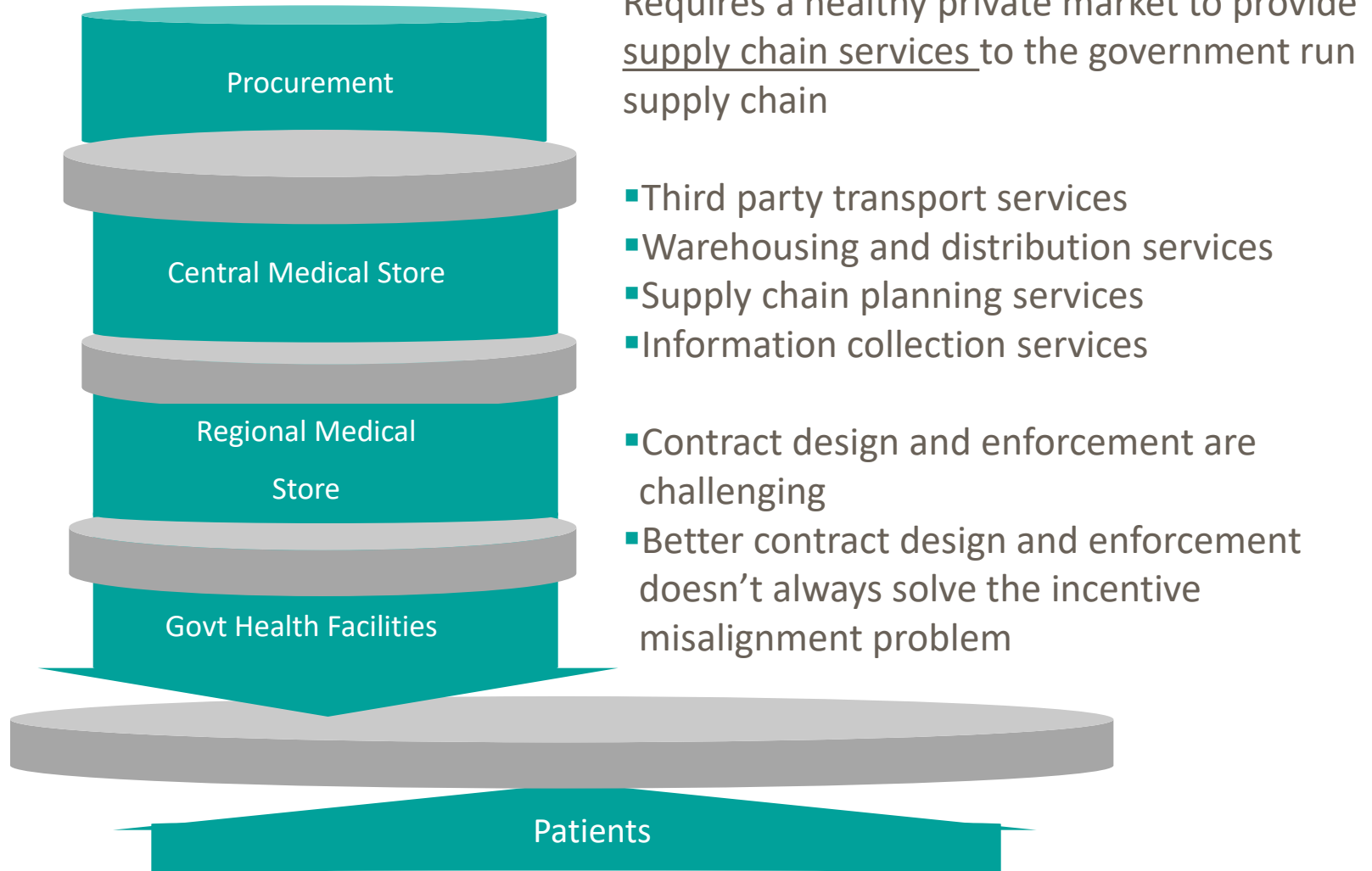# The curse of the forecasting trumpet
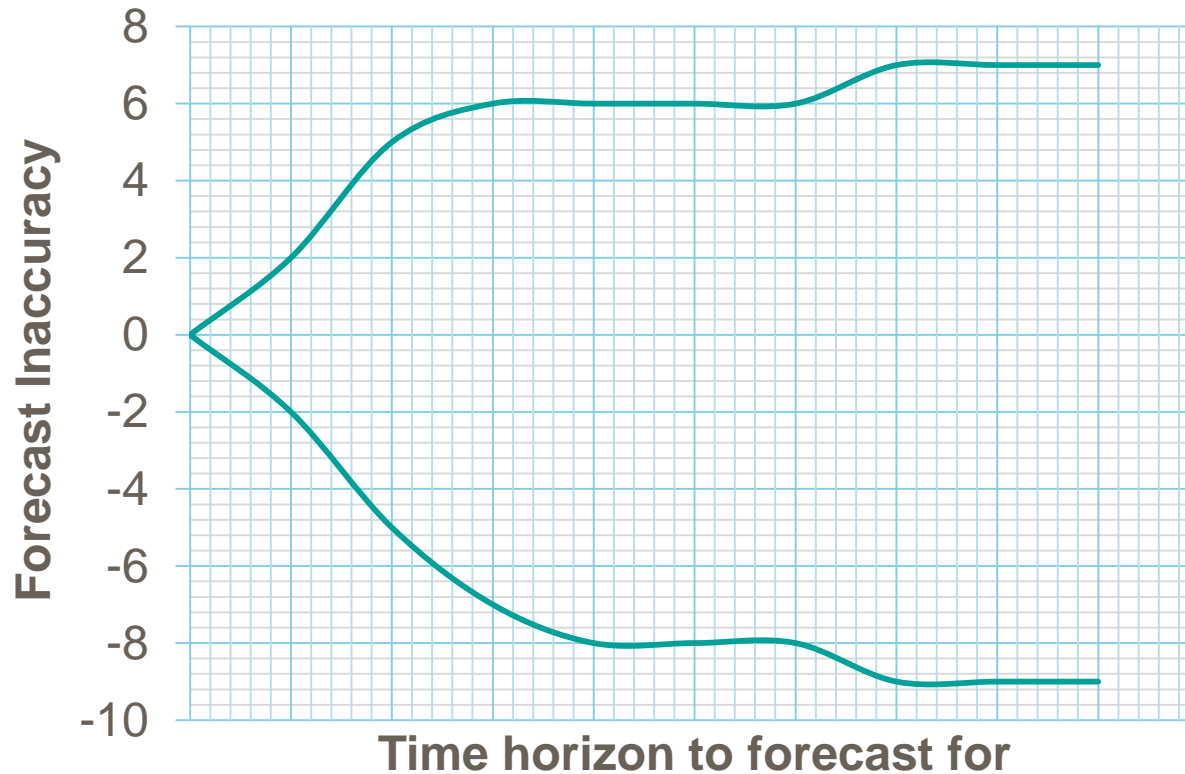
- Higher frequency of shipments i.e. shorter resupply intervals between each stage in the system decrease forecast inaccuracy
- Reduced lead time

Examples of contract conditionality and shift towards market orientation

- YeksiNaa-Senegal
- KEMSA –competition and contract conditionality
- Tamil Nadu Medical Supplies Corporation
- Outsourcing management of medicines supply agency-numerous

Contract conditionality based market orientation has prerequisites

Procurement

Central Medical Store

Regional Medical Store

Govt Health Facilities

Patients

Requires a healthy private market to provide <u>supply chain services</u> to the government run supply chain

- Third party transport services
- Warehousing and distribution services
- Supply chain planning services
- Information collection services

- Contract design and enforcement are challenging
- Better contract design and enforcement doesn't always solve the incentive misalignment problem

In most countries there is a HUGE private retail and wholesale market

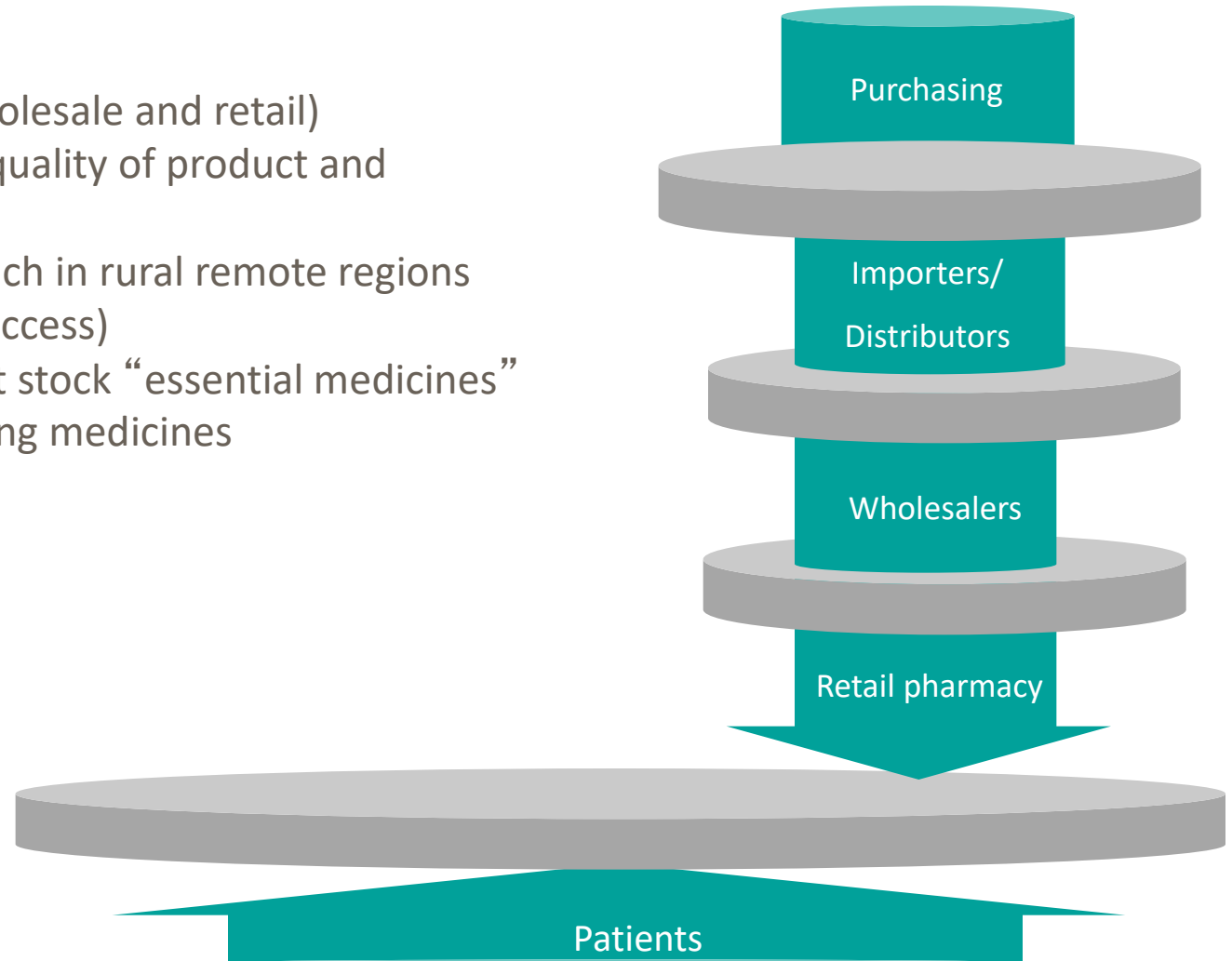Government agencies often believe that:

1. this private market (for non subsidized medicines) had little direct impact on the performance objectives of the government run program

2. Even if it does, they have no direct tools or levers to influence this market

Purchasing

Importers/
Distributors

Wholesalers

Retail pharmacy

Patients
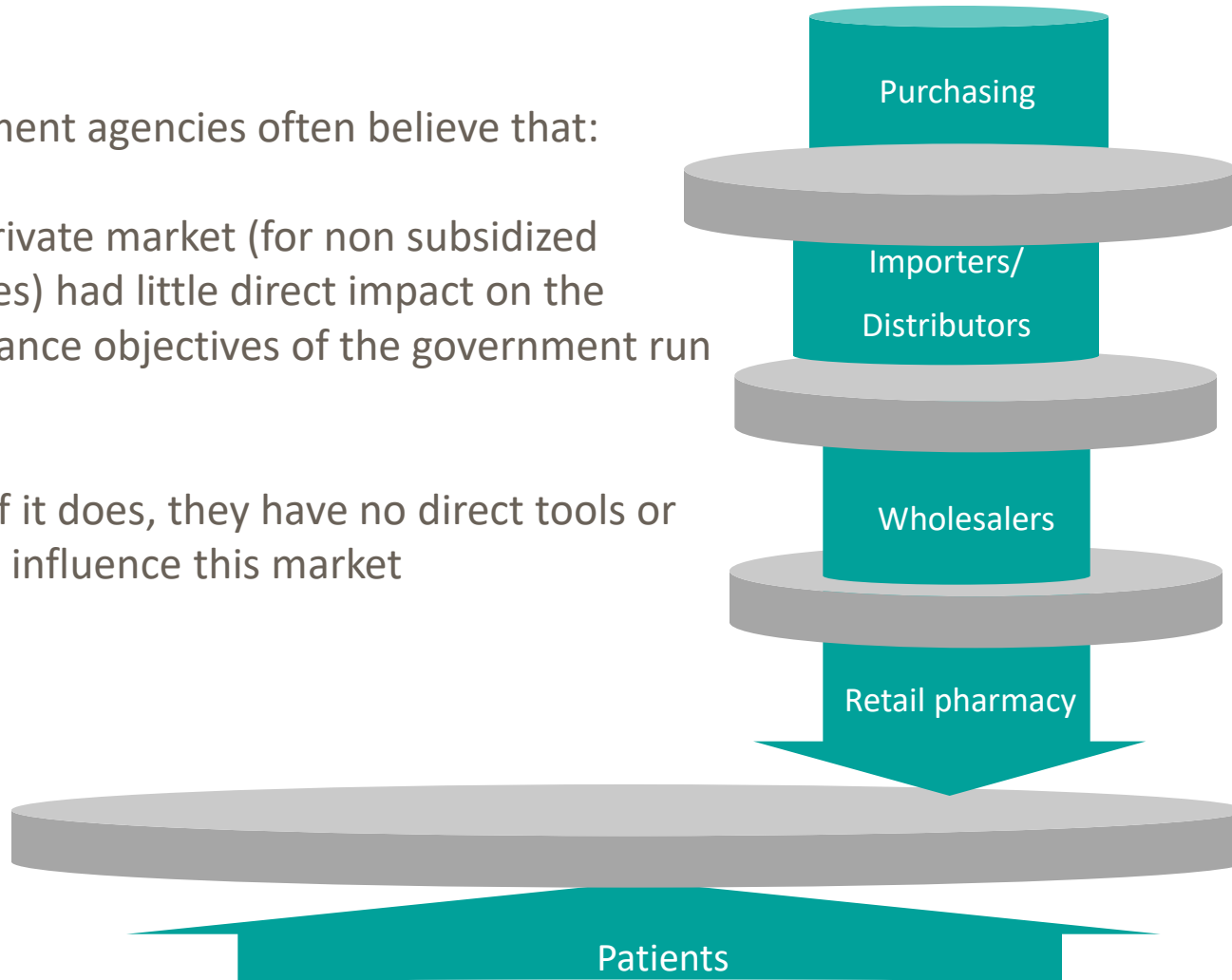
Private supply chain shortcomings

1. High markups (wholesale and retail)
2. Inability to verify quality of product and services
3. Poor coverage/reach in rural remote regions (lack of equity in access)
4. Pharmacies do not stock "essential medicines" but only fast moving medicines

Purchasing

Importers/ Distributors

Wholesalers

Retail pharmacy

Patients

Common response to supply chain market shortcomings

There are shortcomings in the private supply chain

+

Belief that private supply chain does not serve the poor, charges high prices, distributes only fast moving medicines, and provides poor quality medicines

=

Invest in government run supply chain for essential medicines

Systematic understanding of root causes of supply chain shortcomings

High markups
- Lack of competition
- Information asymmetry
- Too many intermediaries

Poor quality
- Excessive fragmentation
- Wrong targeting of limited quality enforcement resources

Inequitable reach
- Excessive fragmentation
- Inadequate solidarity or USO contracting
- Pick-up vs. drop-off

Inadequate assortment
- Slow moving medicines require much greater working capital than fast moving medicines

A policy toolkit for improving private sector (Retail/Wholesale) supply chain

Facilitating retail competition through grants, loans and conditional entry contracts

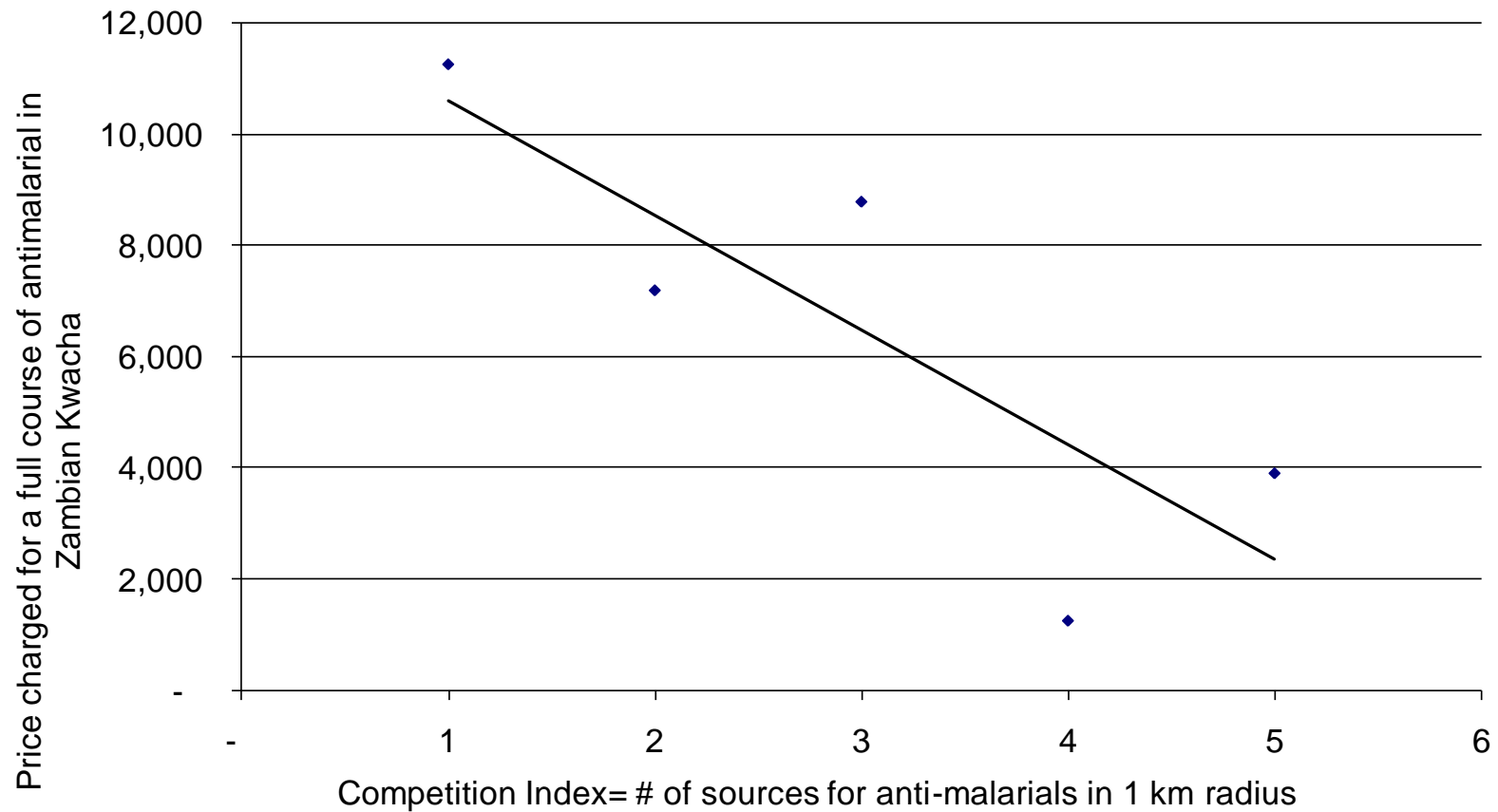Facilitating wholesale consolidation through licensing- entry contracts

Creating incentives for rural distribution- grant, loan and in some cases conditional entry contract

Wholesale and retail markup regulation- Economic regulation

Focused quality enforcement- Economic regulation

Broadcasting price information – Social regulation and public information

Retail competition and markups

Price charged for a full course of antimalarial in Zambian Kwacha (y-axis)

Competition Index= # of sources for anti-malarials in 1 km radius

Study in 4 districts in Zambia by **WB, UNZA and CHAI**

Facilitating greater retail competition

- Second-tier pharmacy models e.g. ADDOs

    For more details read R. Lowe and D. Montagu, "Legislation, regulation, and consolidation in the retail pharmacy sector in low-income countries," *Southern Medical Review*, Vol. 2 Issue 2, September 2009,

- Sweden re-regulation of 2009 increased the number of pharmacies

- Cco-ownership and chain ownership rules relaxed in many EU countries

- "Botiquines" (Spain) and Filialapotekare (Norway)-second tier pharmacies that operate under supervision of a community pharmacy

Understanding retail competition
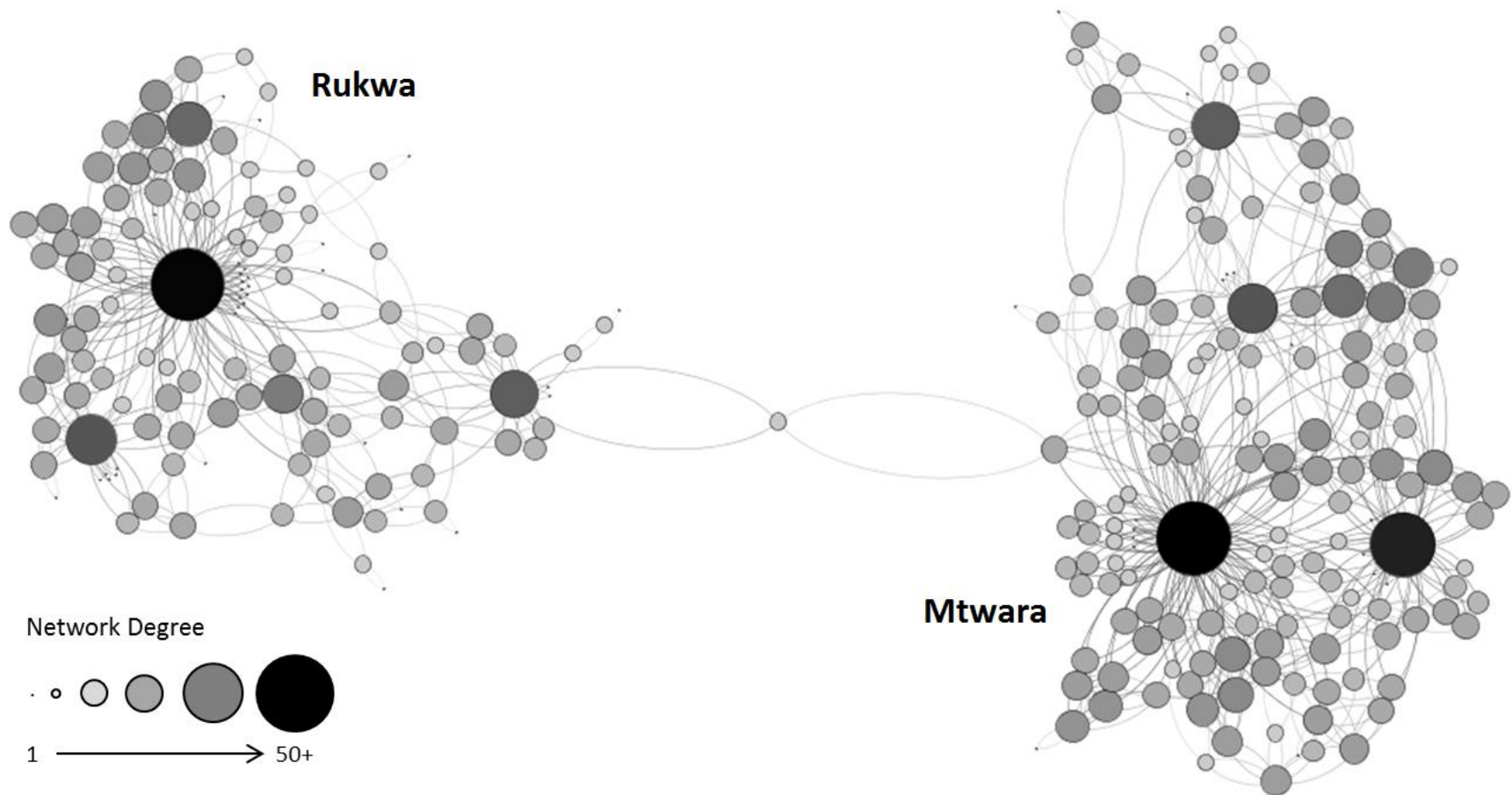
Source: P.S. Larson, P. Yadav, J. L Cohen, S. Alphs, J. Arkedis, J. Massaga Stocking Patterns, Market Competition, and Customer Demand of Subsidized ACTs in Private Drug Shops in Tanzania. 2012

Facilitating greater wholesaler consolidation

- Wholesaling and distribution have significant economies of scale

- Sub-scale wholesalers and distributors cannot make investments in logistics, infrastructure and technology needed for national coverage

- Wholesaler consolidation also eases quality enforcement

- China's stricter enforcement of GDP standards and government support of mergers and acquisitions- number of wholesaler decreased from 16000 to 7000. Three larger players emerging with national coverage

- There is a complex political economy associated with wholesaler consolidation

Creating incentives for rural distribution

- Hard-to-reach populations usually experience poor availability from private supply chains

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- CSO Incentive Pool in Australia
- 4% wholesaler rebate in Greece
- Essential Small Pharmacies Schemes (ESPS) in the UK -financial assistance to pharmacies in rural or low population areas
- Norway public private arrangement for rural access
- Denmark's rural pharmacy equalization scheme
- Professional recognition of rural pharmacists in Spain

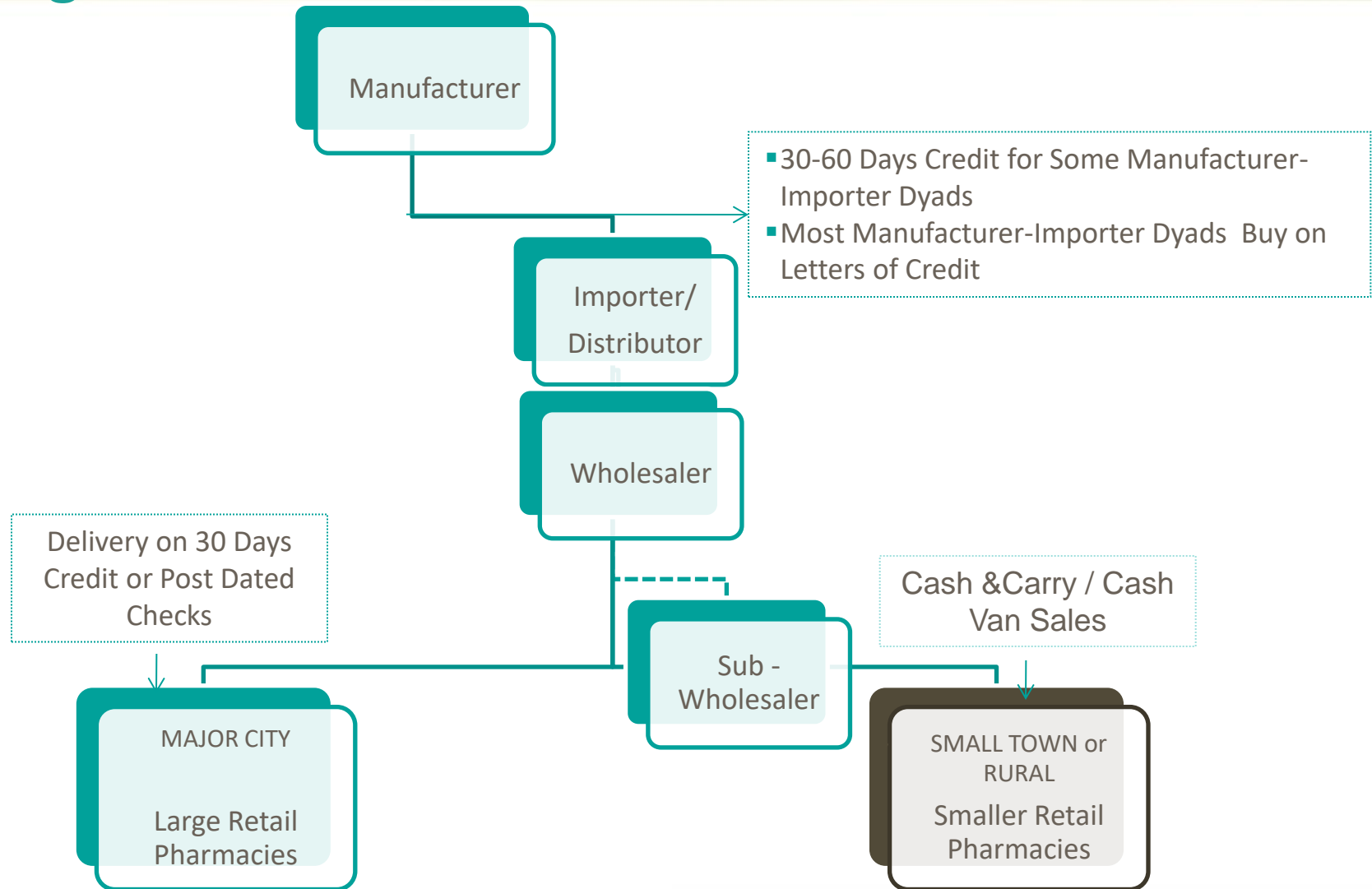# Cash and carry model creates distribution inefficiencies
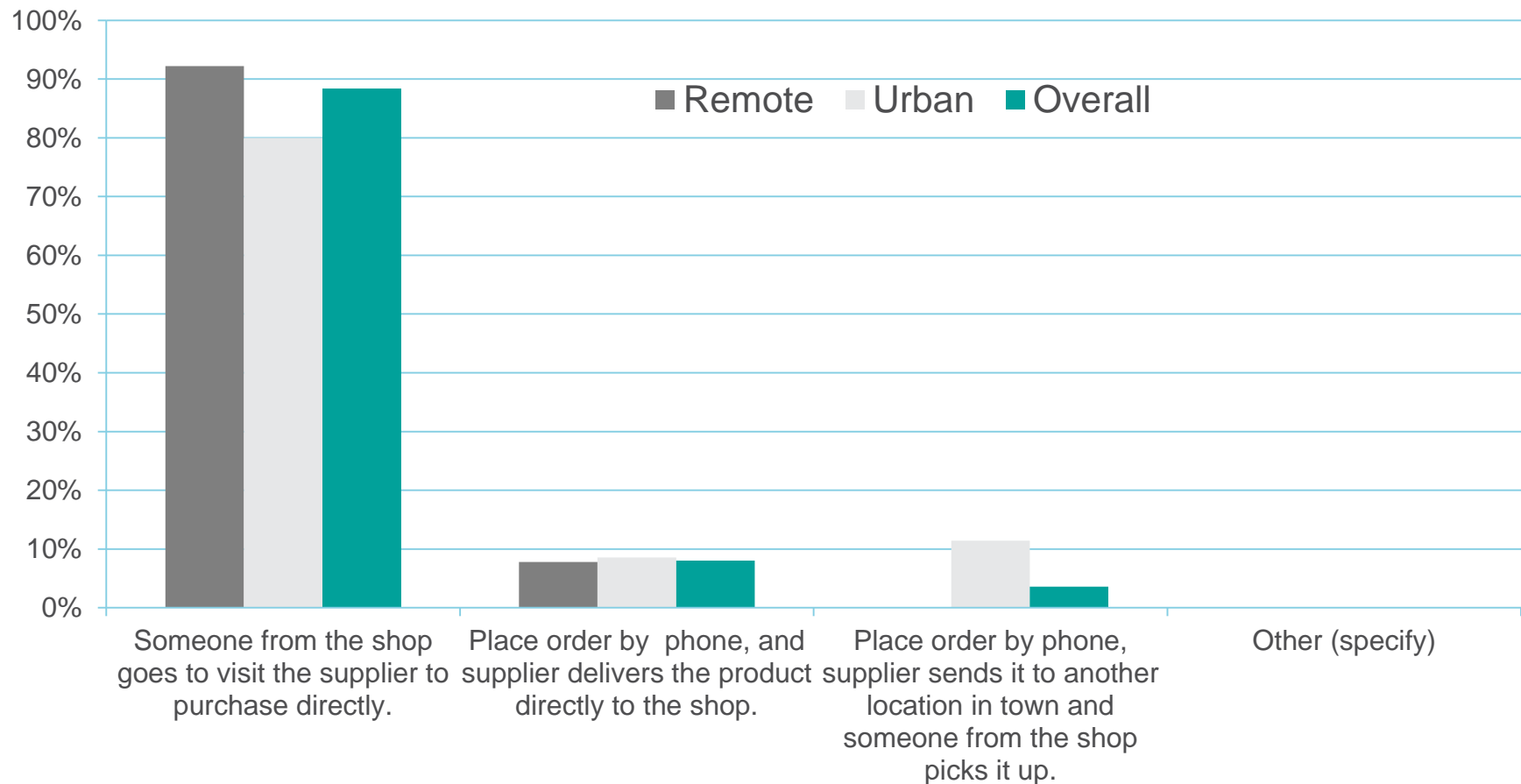
Source: Yadav P, J. L Cohen, S. Alphs, J. Arkedis, P. L Larson, J. Massaga and O. Sabot. Trends in availability and prices of subsidized ACT over the first year of the AMFm: evidence from remote regions of Tanzania, *Malaria Journal* 2012, 11:299
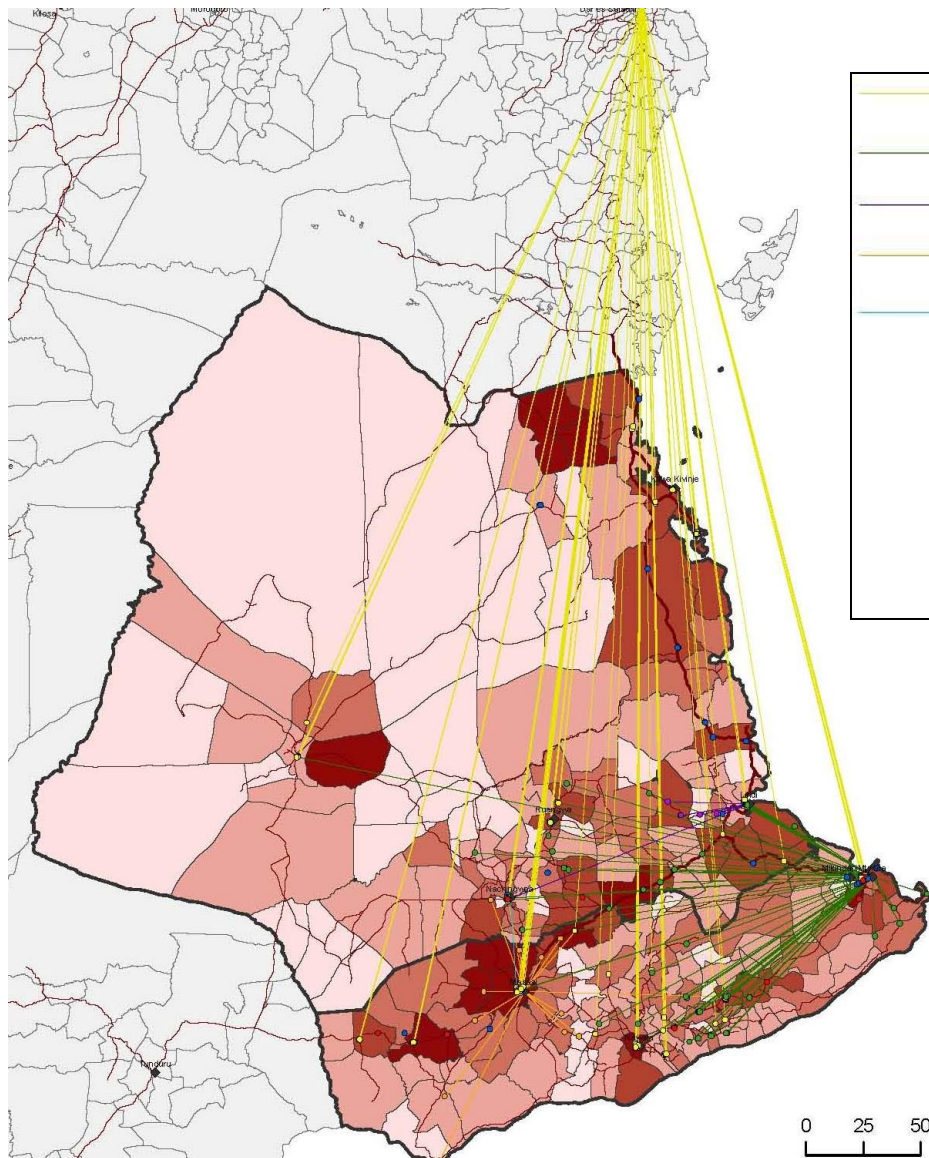
		Drug shop supplier from Dar Es Salaam town	33% (91 out of 276)
		Drug shop supplier from Mtwara town	27% (75 out of 276)
		Drug shop supplier from Lindi town	1,8% (5 out of 276)
		Drug shop supplier from Masasi town	6,5% (18 out of 276)
		Drug shop supplier from Nachingwea town	0,4% (1 out of 276)
		Drug shop supplier from the same town/village (e.g., another drug shop, pharmacy or wholesaler)	12,7% (35 out of 276)
		Drug shop supplier from another location (Chambila)	0,4% (1 out of 276)
		Drug shop supplier from another location	0,4% (1 out of 276)

Poor credit flow limits stocking to inexpensive fast moving medicines

Manufacturer

Importer/ Distributor

- 30-60 Days Credit for Some Manufacturer-Importer Dyads
- Most Manufacturer-Importer Dyads Buy on Letters of Credit

Wholesaler

Delivery on 30 Days Credit or Post Dated Checks

Cash &Carry / Cash Van Sales

Sub - Wholesaler

MAJOR CITY

Large Retail Pharmacies

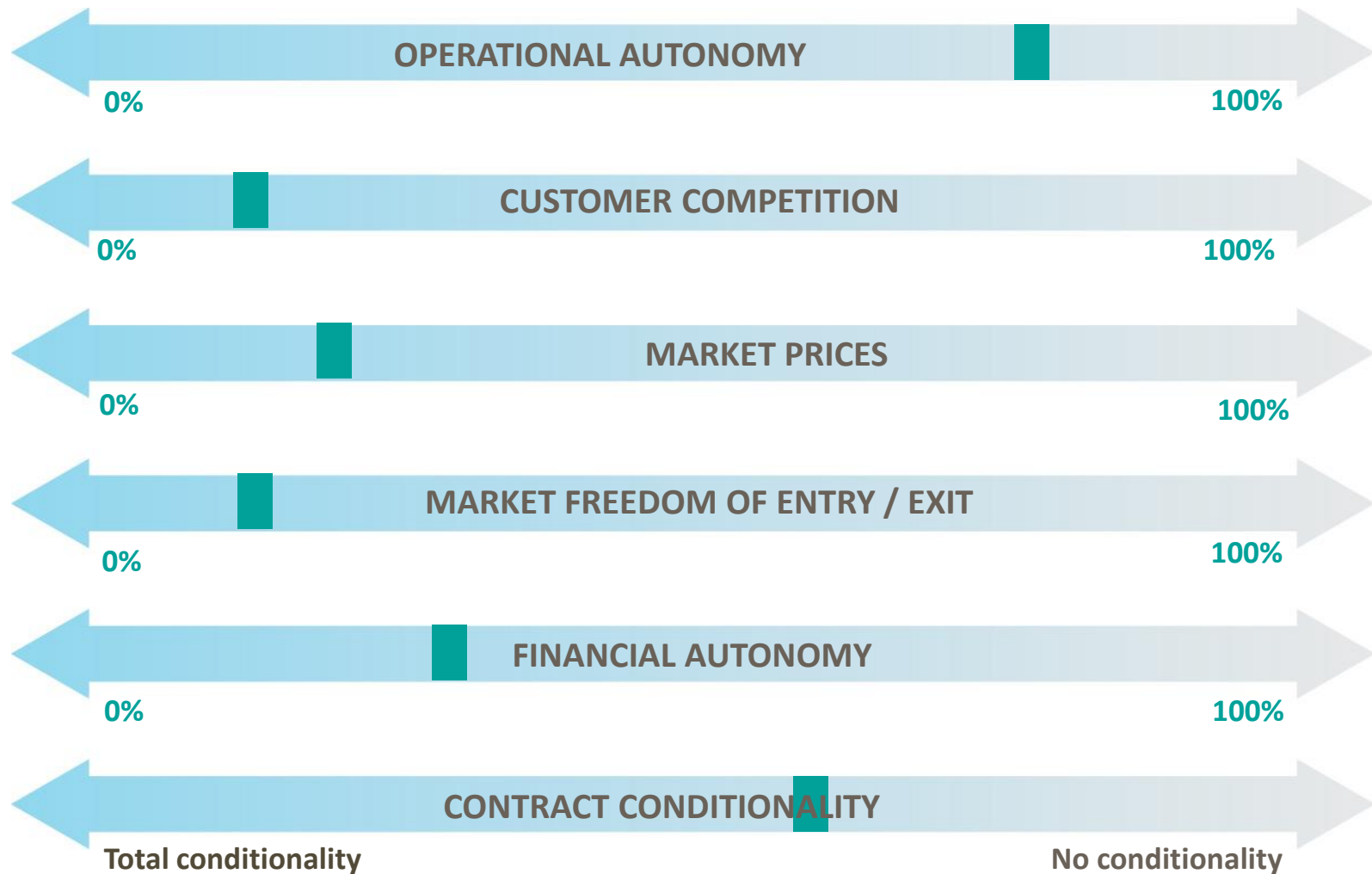SMALL TOWN or RURAL

Smaller Retail Pharmacies

Pharmaceutical Distribution Re-regulation in Sweden

Sweden case background

- Sweden 2012 population ~ 9.5m

- Per capita GDP= US$ 58,163

- Sweden had a state owned monopoly for pharmaceutical distribution since 1971.

- The Swedish government owned all the pharmacies in the country and they were run by a state-owned company called Apoteket AB.

- In 2006, the government initiated discussions about deregulating pharma distribution

- Deregulation was started in 2009 and completed in 2010

- Provides an opportunity to learn the challenges, successes and "things to watch for"

Sweden pharmaceutical market before 2009

OPERATIONAL AUTONOMY

0%   100%

CUSTOMER COMPETITION

0%   100%

MARKET PRICES

0%   100%

MARKET FREEDOM OF ENTRY / EXIT

0%   100%

FINANCIAL AUTONOMY

0%   100%

CONTRACT CONDITIONALITY

Total conditionality   No conditionality

Sweden pre 2009

- Somewhere between an exclusive and selective regime
- Government ownership with some conditional contracting
- High entry barriers in wholesaler, exclusivity in retail

2009 deregulation objectives

- Increased access to pharmaceuticals

- Improved service and service range

- Low pharmaceutical costs

- A secure supply of drugs

- Making use of the pharmacies´ contributions to an improved use of pharmaceuticals

Overall structure pre-2009

- The government-owned monopoly, the National Corporation of Swedish Pharmacies (NCSP) (called *Apoteket AB*) operated approximately 925 pharmacies nationwide

- The Swedish Dental and Pharmaceutical Benefits Board (DPBA) decided reimbursement levels

- For a product to be included in the Swedish pharmaceuticals insurance (or patient reimbursement) system the prices had to meet a cost-benefit threshold in order to receive authorization from the DPBA.

- The NCSP's retail margin for prescription pharmaceuticals was also regulated by the Swedish Dental and Pharmaceutical Benefits Board (DPBA)

- Approximately 9000 registered pharmaceuticals

- The total pharmacy sales of medicines amounted to SEK 35.7 billion (€4 billion) in 2009, two-thirds were prescription drugs

Other actors

Regulatory body for supervision over all pharmacies in Sweden.

The Swedish Dental and Pharmaceutical Benefits Board (TLV)

POS information flow and SJUNET

- eRecept (electronic prescription) were transmitted from the doctor to the pharmacy using an electronic network known as Sjunet.

- The ePrescriptions was a joint effort between each county council in Sweden and Apoteket the government owned retail chain

- A larger number of prescriptions in Sweden were electronic as compared to other members states

Pharmaceutical distribution pre-2009

Source: Tamro reports

Distribution pre-2009

- During the monopoly Sweden had a single channel distribution system

- The single channel distribution concept means that a pharmaceutical company is required to supply the entire market with its product through a single distributor

- It was seen as a cost effective distribution system and also easier to ensure product quality/traceability

- There were only two wholesalers/distributors on the market

- No pre-wholesaling

Distribution post-2010

- Pharmacies allowed to set up their own distribution chain

- Some of the larger pharmacy chains started their own distribution and established more effective distribution models

- The one channel distribution system gave way to pluralistic distribution.

Pharmaceutical distribution 2012

Market situation in the end of 2012
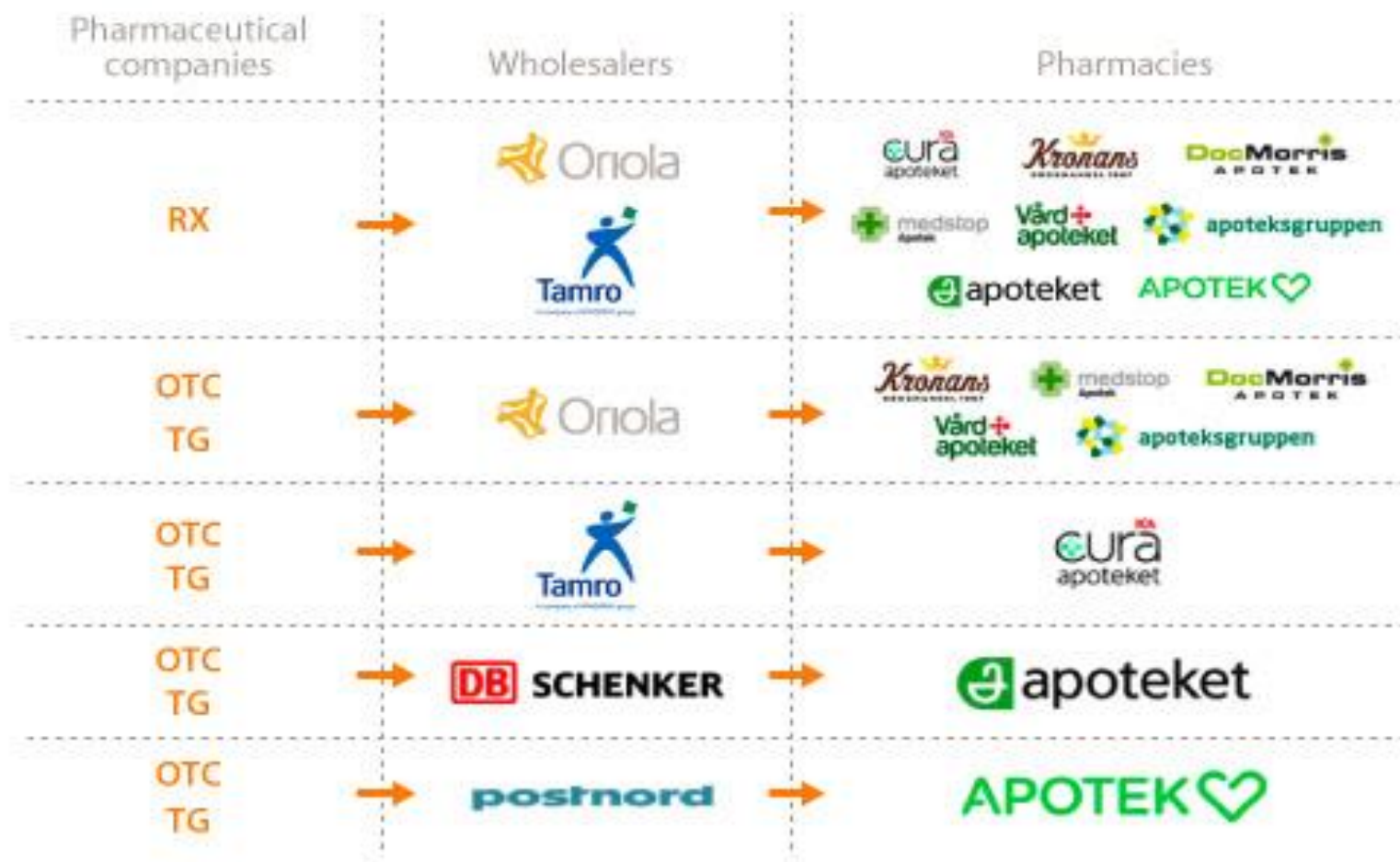
Source: Tamro reports

Channel pricing structure post 2009

- Wholesale price (WP) ≤ 75.00 SEK Retail price = (WP x 1,20) + 31.25 SEK + 10.00 SEK

- Wholesale price > 75,00 - 300,00 SEK Retail price = (WP x 1,03) + 44,00 SEK + 10,00 SEK

- Wholesale price > 300,00 - 6000,00 SEK Retail price = (WP x 1,02) + 47,00 SEK + 10,00 SEK

- Wholesale price > 6000,00 SEK Retail price = WP + 167,00 SEK + 10,00 SEK

Source: Bergman MA, Granlund D and Rudholm N., Reforming the Swedish pharmaceuticals market – consequences for costs per defined daily dose.

Effect on price

- The retail price per DDD fell by 19 percent and the wholesale price fell by 35 percent.

- The results also indicate that, at the retail level, the price-cap effect and the general reform effect account for roughly half of the total price effect each, while at the wholesale level the effect stemming from the price cap is somewhat smaller than the general reform effect.

- The reforms reduced the DDD cost for consumers while maintaining healthy sustainable margins for retail pharmacies, wholesalers and pharmaceutical companies

Source: Bergman MA, Granlund D and Rudholm N., Reforming the Swedish pharmaceuticals market – consequences for costs per defined daily dose.

Effect on geographical access

- The number of pharmacies, just less than three years after the abolition of the monopoly, had risen by 316, which is an increase of just over 34 percent.

The number of pharmacies has increased 37 per cent after liberalization of the pharmacy market
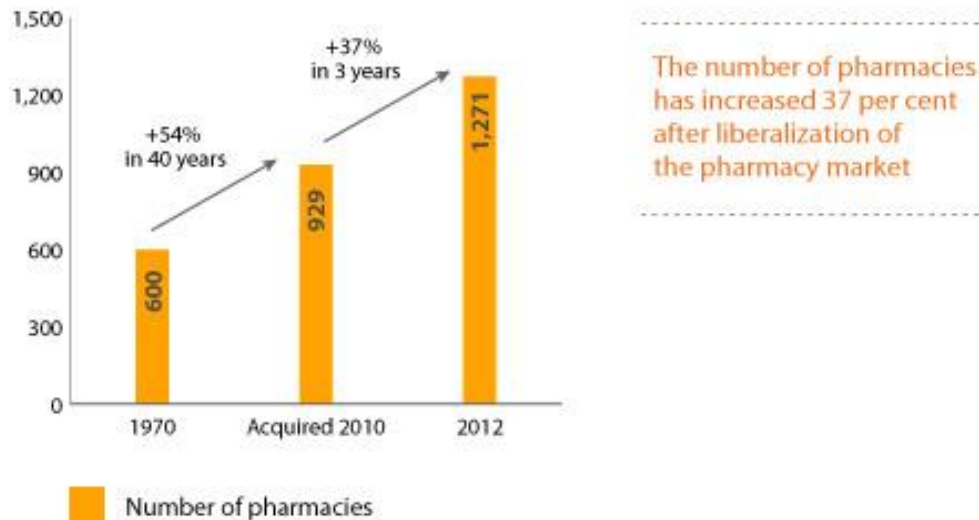
Source: Tamro reports
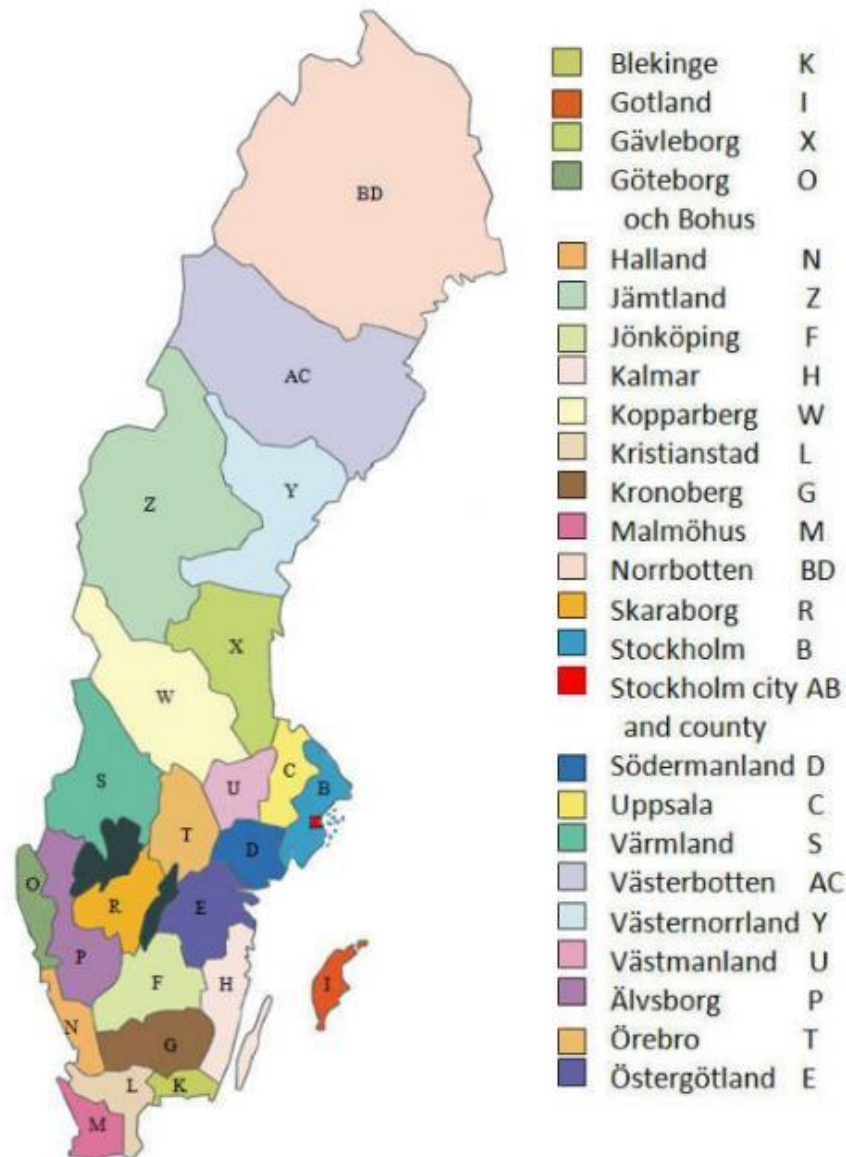
Effect on geographical access

- The majority of new pharmacies have been established in urban areas or in places in proximity to urban areas.

- New pharmacies have opened in a number of areas that previously lacked such a service.

  - At least one new pharmacy has been established in each county, but the relative increase in the number of pharmacies varies greatly between counties. Stockholm County has witnessed a 56 percent rise in the number of pharmacies, while Jämtland County has only seen a 4 percent increase.

- No pharmacies have been established in sparsely populated areas, while there have been six more pharmacies in rural areas close to densely populated areas. At the same time, around thirty of the new pharmacies have been established at locations where no pharmacy had previously existed.

- In addition to the new pharmacies, 5600 new sales outlets for sales of certain OTC medicinal drugs have been established.

Source: Statskontoret report

Effect on geographical access

- Opening hours of pharmacies have increased
- The average weekly opening hours of pharmacies has increased from just over 45.5 hours in 2008 to 52 hours in 2012. The number of pharmacies in the country that are open on Sundays has increased from 154 to 422.
- Stockholm County has the longest opening hours, Jämtland County has the shortest.
- Inventory positioning had deteriorated but is improving

Source: Statskontoret report

Blekinge	K
Gotland	I
Gävleborg	X
Göteborg och Bohus	O
Halland	N
Jämtland	Z
Jönköping	F
Kalmar	H
Kopparberg	W
Kristianstad	L
Kronoberg	G
Malmöhus	M
Norrbotten	BD
Skaraborg	R
Stockholm	B
Stockholm city and county	AB
Södermanland	D
Uppsala	C
Värmland	S
Västerbotten	AC
Västernorrland	Y
Västmanland	U
Älvsborg	P
Örebro	T
Östergötland	E

Effect on distribution

- A competitive market for distribution
- Higher frequency of deliveries to pharmacies
- New distribution warehouses
- LSP and pre-wholesaling models have emerged

Distribution market competition index

Wholesaler Shares	Celesio	Phoenix	Alliance Boots/Anzag	Sanastera	Oriola	Mediq	International Wholesaler % Share
Austria	48.0	17.0					65.0
Belgium	17.1			8.1			25.2
Czech		38.0	17.0				55.0
Denmark	30.0	70.0					100.0
Finland		54.0			45.0		99.0
France	34.4	8.0	26.3	28.8			97.5
Germany	18.0	28.0	16.0	15.0			77.0
Hungary		35.0					35.0
Italy	1.0	19.0	16.0				36.0
NL		17.0	23.0			26.0	66.0
Norway	45.0	35.0	20.0				100.0
Poland		2.0				7.0	9.0
Russia			9.9		4.3		14.2
Slovak		36.0					36.0
Slovenia	49.0						49.0
Spain			11.9				11.9
Sweden		57.0			42.0		99.0
Switzerland		30.0					30.0
UK	33.5	15.0	38.5				87.0
19 Countries	14.8	16.9	16.1	6.0	2.2	1.3	57.2

Transitioning the electronic prescription system

- eHälsomyndigheten (Swedish eHealth Agency) is responsible of the infrastructure and service systems that used to be administered by Apoteket AB.

- The systems concerned are e.g. the pharmaceutical registry, the prescription registry and the annual health care fee limit data base. The systems were transferred to this state-owned company in order to make them available to private as well as state-owned pharmacies

Key pre-requisites for the success of the reform

LÄKEMEDELSVERKET
MEDICAL PRODUCTS AGENCY

Enforcement of quality standards for wholesaling and retail pharmacies

- Dental and Pharmaceutical Benefits Agency's (TLV)

- The Swedish Agency for Public Management (*Statskontoret*)—an agency under the Ministry of Health and Social Affairs that evaluates and follows-up state-funded initiatives- created public accountability and confidence

- The "Svenskt Kvalitetindex" (EPSI - Extended Performance Satisfaction Index), an index of customer satisfaction-created public accountability and confidence

- Private capital providers- PE Firms

DISCUSS TANZANIA CASE STUDY