

# Domestic resource mobilization. Infrastructure

## Setting the scene: Infrastructure patterns in emerging markets

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Development Finance Network (DeFiNe)  
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# Main messages

- **Infrastructures are key for potential growth, development and stabilization policies** (e.g. G20 agenda)

Growth and inequality gaps Asia-Latin America explained by infrastructure gaps – less spending, lower quality (Calderón and Servén, 2004b)

- **Emerging economies: significant infrastructure gaps**

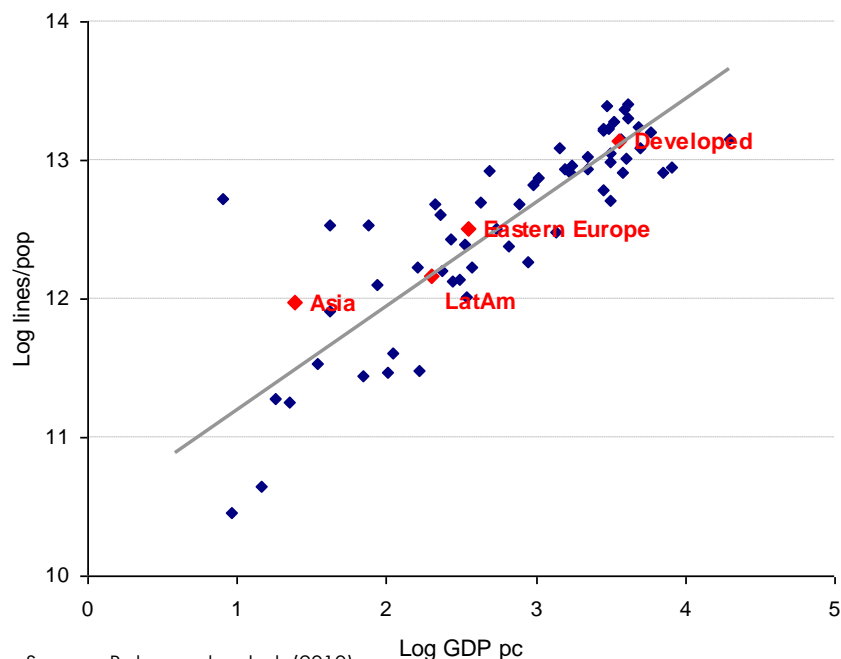
- Latin America lags behind Asia and emerging Europe
- Significant differences across infrastructure types (basic, transport, energy and telecommunications) and countries
- Fundamentals-observed levels (Balmaseda, Daude, Melguizo and Taft, 2010)

- **Policy response**

- Building better institutions (quality of bureaucracy, fiscal position)
- Improving regulation (in particular around public-private financing)

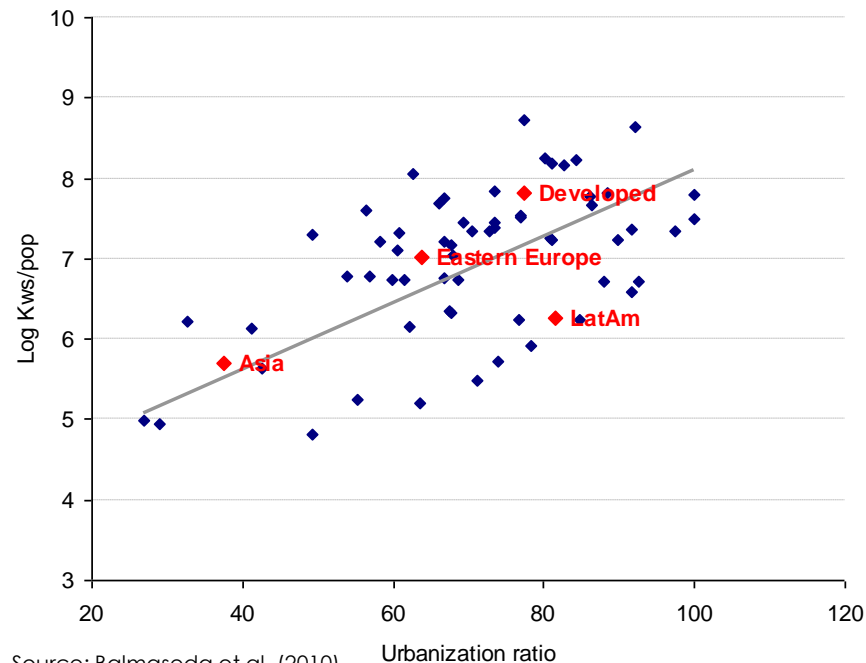
# Setting priorities: infrastructure levels

Per capita telephone lines and  
Income level, 2007



Source: Balmaseda et al. (2010)

Kilowatts pc and Urbanization  
rate, 2006



Source: Balmaseda et al. (2010)

**Income and population matter – but so do demographic (age profile), social (urbanization) and economic (sector mix) variables.**

# Empirical model (Balmaseda et al., 2010)

## Explanatory variables

- Per capita income (level and squared)
- Socio- demographics (urbanization, density)
- Productive structure (services and industry vs. agriculture)

**Predicted infrastructure patterns** (Km/area, KW pc, pc lines)

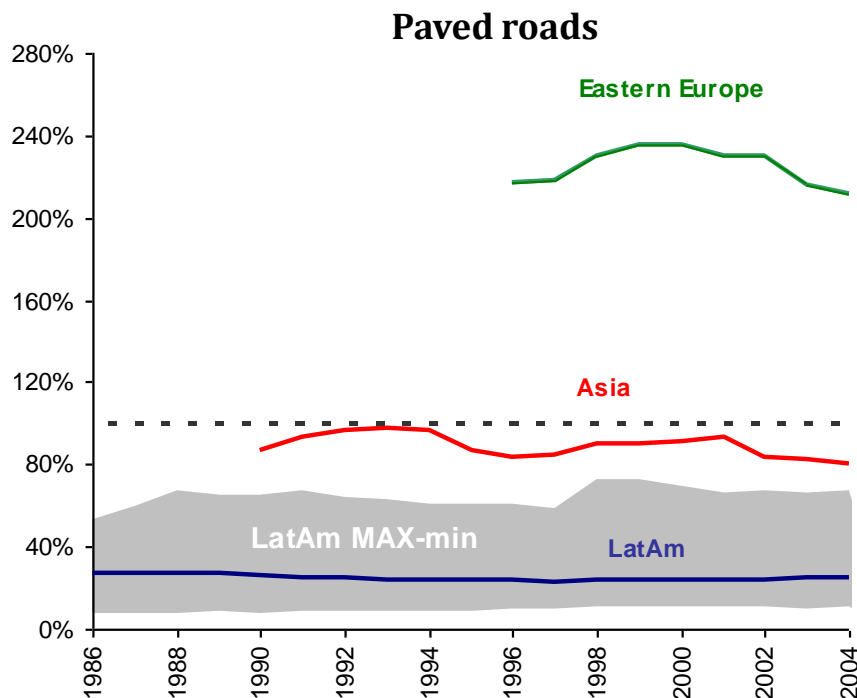
**Observed levels** (Km/area, KW pc, pc lines)

**'Degree of achievement'**  
(Observed levels/  
Patterns)

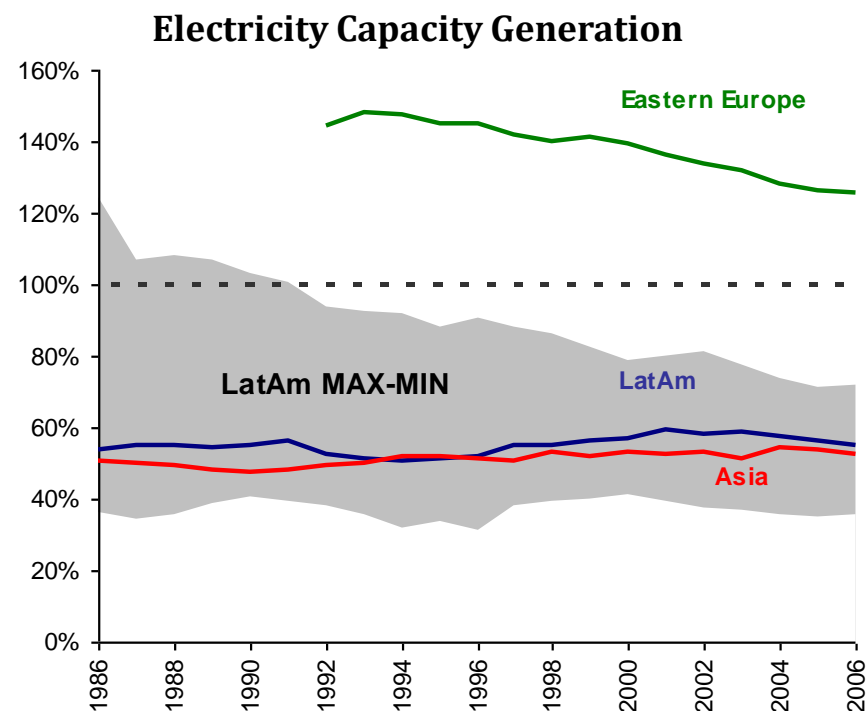
**Predicted infrastructure patterns (for country  $i$ , in time  $t$ ) can be compared to actual levels, to estimate gaps and identify priorities.**

# Results (observed vs. predicted): Priorities

Observed / Predicted (%)



Source: Balmaseda et al. (2010)



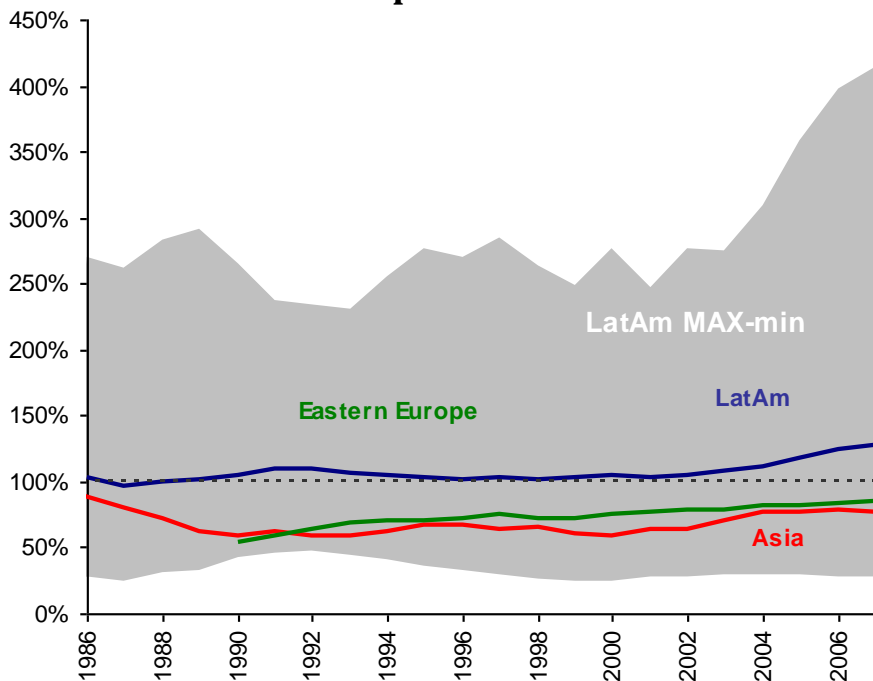
Source: Balmaseda et al. (2010)

**Asian and Lat. Am. challenges concentrated in Transport and Energy infrastructure. In LAC, even the regional leader is below predicted levels.**

# Results (observed vs. predicted): Priorities

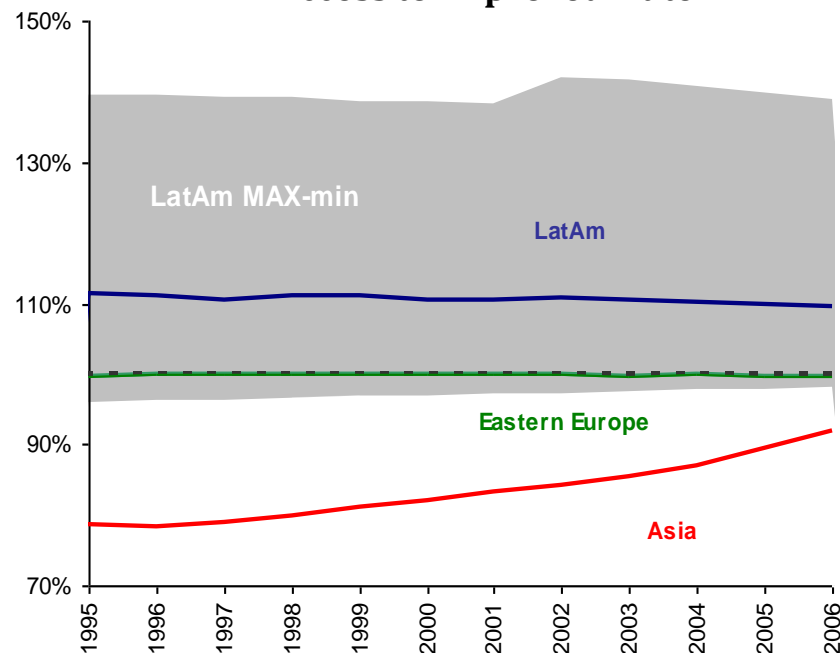
Observed / Predicted (%)

Telephone lines



Source: Balmaseda et al. (2010)

Access to improved water

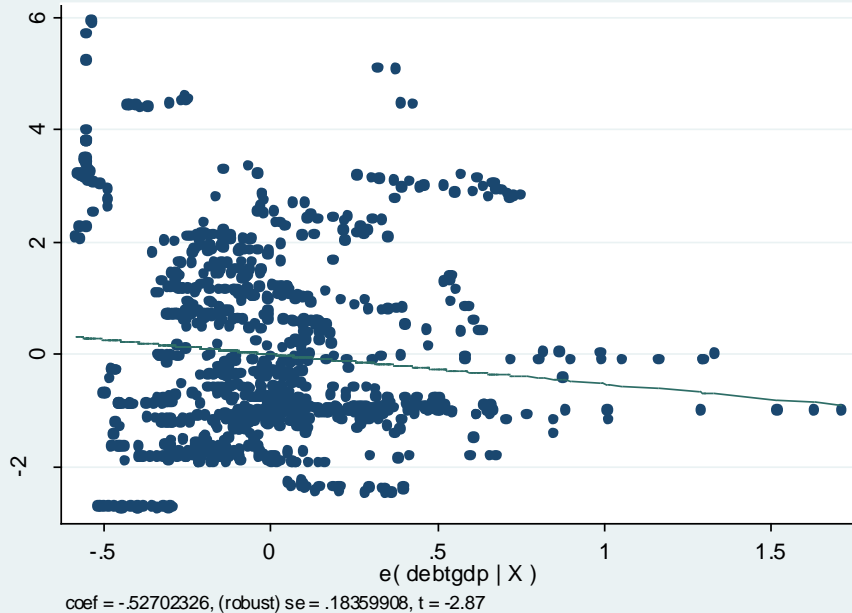


Source: Balmaseda et al. (2010)

**The situation in telecommunication and basic infrastructure is more balanced. Some good practices may stem from LAC.**

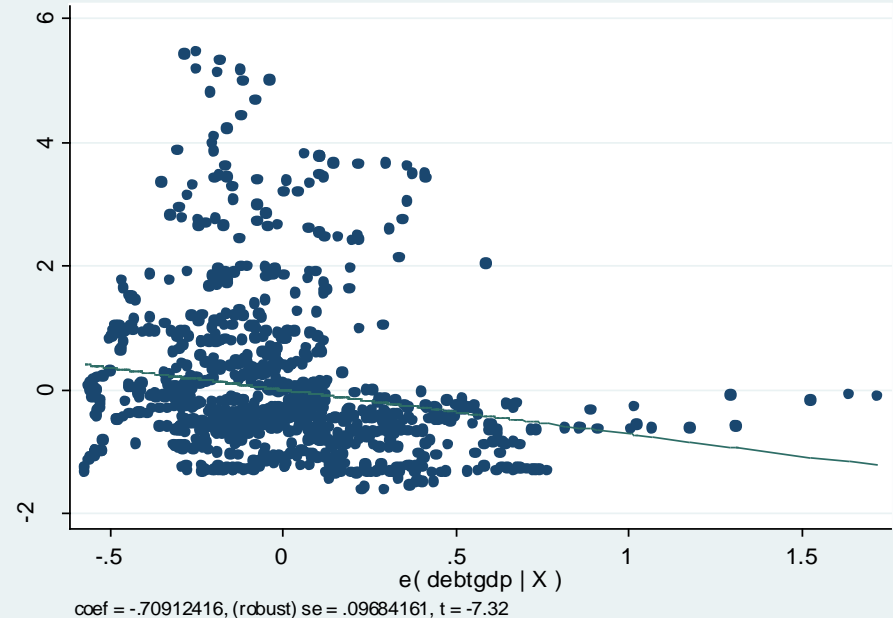
# Results (gaps and fiscal balances): Domestic financing

## Railways



Source: Balmaseda et al. (2010)

## Electricity



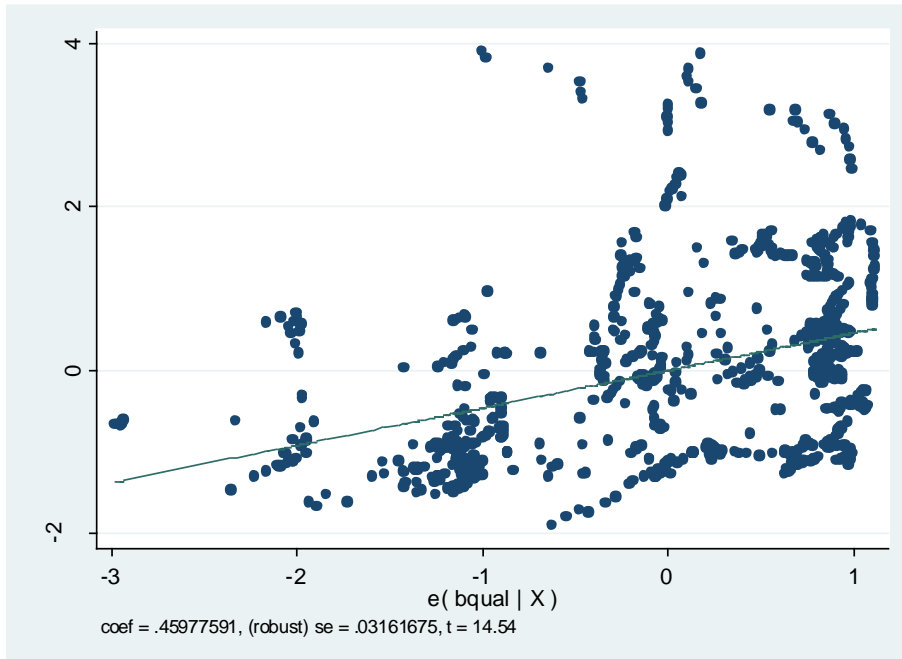
Source: Balmaseda et al. (2010)

## Lower public debt ratios are correlated with lower infrastructure gaps

- Fiscal consolidation have been traditionally based on investment cuts (Calderón and Servén, 2004a, Martner and Tromben, 2005 for LAC)
- Public borrowing costs reflect (perceptions of) debt sustainability

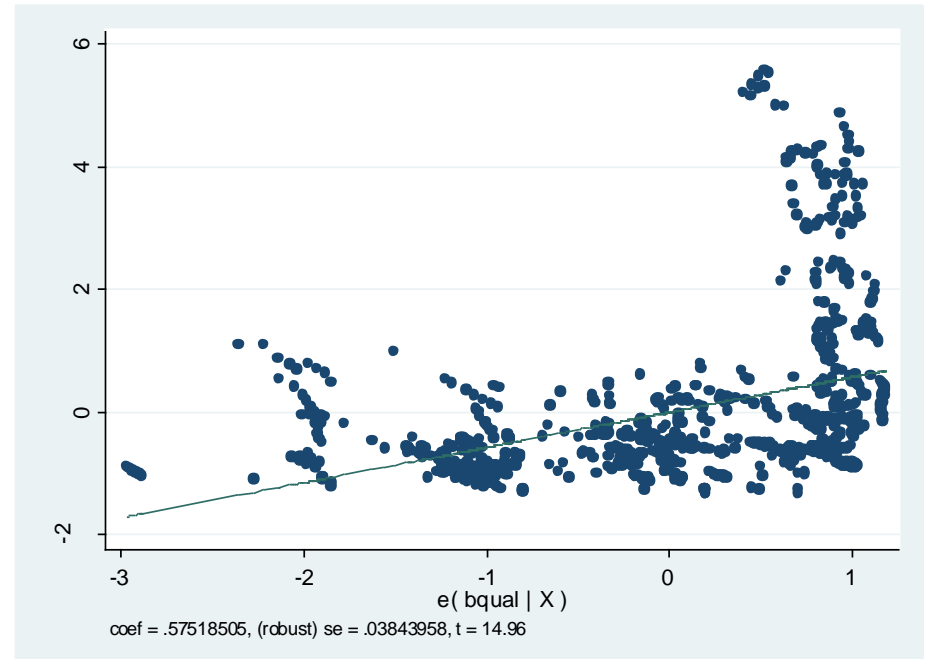
# Results (gaps and bureaucracy): Public administration

Paved roads



Source: Balmaseda et al. (2010)

Electricity



Source: Balmaseda et al. (2010)

## Better institutions (quality of bureaucracy) are correlated with lower infrastructure gaps

- Need to have domestic resources and management capacity
- Governance, control of corruption, adequate regulation



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[www.oecd.org/dev/americas](http://www.oecd.org/dev/americas)



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# Annex: Database

Emerging Economies				Developed		
LatAm	Asia	Eastern Europe	Other	Asia	Europe	North America
Arg	China	Bul	Isr	Kor	Austria	US
Bra	India	Cro	Tur	HK	Bel	Can
Chile	Indo	Cz	Rus	Sing	Fra	
Col	Mal	Hun	Jor	Jap	Ger	
Mex	Phi	Lit	South Af.	Aud	Gre	
Ven	Tha	Est	Egy	NZ	Ire	
Peru	Vietnam	Pol	Mauritania		Ita	
Costa Rica		Rom	Mor		Net	
Dom. Republic		Slovak			Por	
		Slovenia			Spa	
		Ukr			OK	
					Lux	
					Swi	
					Den	
					Fin	
					Nor	
					Swe	
					Ice	

# Annex: Database

Variable	Units	Coverage		Source
		Number of countries	Sample	
<b>Infrastructure Stocks</b>				
Telephone lines (mobile and fixed)	Number of lines	61	80-07	Canning (1998) and Canning and Farahani (2007), extended with WB <i>World Development Indicators</i> . For electricity, 2006 from the United Nations' Energy Statistics.
Electricity Generating Capacity	Kilowatts	60	80-06	
Paved Roads	Kilometers	61	80-04	
Rail-lines	Kilometers	60	80-06	
Improved water source (% of population with access)	%	51	90-06	
Sanitation (% of population with access)	%	46	90-06	
Number of Personal Computers	In million	61	93-06	
Number of Internet users	In million	61	93-06	
<b>Other variables</b>				
Population	In million	61	80-07	World Development Indicators
Gross Domestic Product	In constant 2005 PPPs	61	80-07	
Land area	In squared kilometers	61	80-07	
Urbanization ratio	% of urban population over total	61	80-07	
Share of Industry, Services, Agriculture on GVA	%	61	80-07	

# Annex: Results

## *Regressions at a glance*

	<b>Basic</b>		<b>Energy</b>	<b>Transport</b>		<b>Telecommunications</b>		
	Water	Sanitation	Electricity	Roads	Railways	Telephones	PC	Internet
<b>Income pc</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>
<b>Income pc2</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>		
<b>Urbanization</b>			<b>+</b>			<b>+</b>	<b>+</b>	<b>+</b>
<b>Density</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>
<b>Services</b>	<b>+</b>	<b>+</b>	<b>+</b>	<b>+</b>		<b>+</b>	<b>+</b>	<b>+</b>
<b>Industry</b>	<b>+</b>	<b>+</b>	<b>+</b>			<b>+</b>	<b>+</b>	<b>+</b>

Note: Panel estimation. Telecoms and Energy regressions include temporal fixed effects. Bold, significant at 5 per cent

Source: Balmaseda et al. (2010)

## *Results at a glance*

**Observed / Pattern**  
(%, weighted average)

	<b>Basic</b>	<b>Energy</b>	<b>Transport</b>	<b>Telecos</b>	<b>Total</b>
<b>LatAm</b>	<b>115%</b>	<b>55%</b>	<b>26%</b>	<b>103%</b>	<b>81%</b>
<b>Emerging Asia</b>	<b>79%</b>	<b>53%</b>	<b>55%</b>	<b>204%</b>	<b>117%</b>
<b>Eastern Europe</b>	<b>100%</b>	<b>125%</b>	<b>247%</b>	<b>161%</b>	<b>163%</b>
<b>Developed</b>	<b>102%</b>	<b>143%</b>	<b>185%</b>	<b>75%</b>	<b>118%</b>

Source: Balmaseda et al. (2010)