

Global Growth Opportunities and Market Integration

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Outline

- **Measuring country-specific growth opportunities (*GO*)**
 - *PE* ratios and future economic growth
 - Global industry *PE* ratios as an exogenous predictor
- **Global growth opportunities and actual growth**
 - Financial openness
 - Financial development, investor protection, and openness
- **Market integration and segmentation**
 - Differences in financial valuation vs. differences in real economic activity
- **Testing Return Predictability**

Related Literature

- **Measuring country-specific growth opportunities (GO)**
 - Smith and Watts (1992), Booth et al. (2001), Allayanis et al. (2003)
 - Fisman and Love (2004), Gupta and Yuan (2004)
- **Global growth opportunities and actual growth**
 - Rodrik (1998), Edwards (2001), Quinn and Toyoda (2001), Henry (2000), Bekaert, Harvey, and Lundblad (2001, 2005)
 - Rajan and Zingales (1998), Fisman and Love (2004), La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997)
- **Market integration and segmentation**
 - Feldstein and Horioka (1980), Obstfeld and Rogoff (2000)
 - French Poterba (1991), Tesar and Werner (1995), Baxter and Jerman (1997)
 - Harvey (1991), Bekaert and Harvey (1995)
- **Testing Return Predictability**
 - Stambaugh (1986, 1999), Nelson and Kim (1993), Lewellen (2004)

Summary of Results

- **Measuring country-specific growth opportunities (GO)**
 - Local and global *PE* ratios predict GDP and investment growth
- **Global growth opportunities and actual growth**
 - Countries with open equity markets and banking sectors are most successful at exploiting available growth opportunities
 - Financial development is also important, but to a lesser degree
- **Market integration and segmentation**
 - De jure and de facto openness (integration) generally coincide
- **Testing Return Predictability**
 - Possible solution to the small sample bias?

Measuring Growth Opportunities (GO)

- Growth potential of a country = Growth potential of its mix of industries
 - Derive industry weights (IW) per country
- Industry growth opportunities reflected in industry PE ratios
 - Collect **local** (i) and **global** (w) industry PE ratios
- $GO = \ln[PE' IW]$
 - $LGO_i = \ln[PE'_i IW_i]$
 - $GGO_i = \ln[PE'_w IW_i]$

Local vs. Global Growth Opportunities

- Predicting growth with *LGO* and *GGO*
 - *GGO* as an exogenous control for country-specific growth opportunities (eg Bekaert, Harvey, Lundblad (2005))
 - Exploiting global growth opportunities
- *LGO* – *GGO* as a test for market integration

Data

Panel Dimensions:

50 countries (17 developed, 30 emerging) between 1980 and 2002

Industry Weights (IW) at annual frequency

- **relative equity market capitalization (lagged)**
(S&P EMDB and DataStream)
- relative value added (VA) for manufacturing industries only
(UNIDO Industrial Statistics Database)

Global Industry PEs from DataStream at monthly frequency

$LGO_i \approx \ln [\text{local market } PE]$

Remove 60 month MA (“_MA”)

$$GGO_i = \ln[PE_w'IW_i]$$

Framework of Analysis

First, verify that **LGO** predicts GDP and investment growth:

$$y_{i,t+5,5} = a_{i,0} + a_{i,1,t} LGO_{i,t} + u_{i,t+5,5}$$

Next, consider **GGO**:

$$y_{i,t+5,5} = a_{i,0} + a_{i,1,t} GGO_{i,t} + u_{i,t+5,5}$$

Let $a_{i,1,t}$ vary with country characteristics:

- Openness to foreign capital
- Financial development
- Investor protection & political risk

LGO: Predicting Growth

1980 – 2002

	Annual real GDP growth (5-year horizon)			Annual real investment growth (5-year horizon)		
	All Countries	Developed	Emerging	All Countries	Developed	Emerging
LGO	0.0026* (0.0004)	0.0072* (0.0013)	0.0017* (0.0006)	0.0071* (0.0017)	0.0256* (0.0044)	0.0001 (0.0042)
N =	551	306	211	551	306	211
LGO_MA	0.0043* (0.0001)	0.0097* (0.0018)	0.0040 (0.0125)	0.0154* (0.0040)	0.0279* (0.0062)	0.0118 (0.0075)
N =	415	306	95	415	306	95

Stronger if larger share of economy is **unregulated**

Weaker if **equity market turnover** is higher

GGO: Predicting Growth (1)

1980 – 2002

Annual real GDP growth (5-year horizon)

	All Countries	Developed	EU Countries	Emerging
GGO	0.0070* (0.0019)	0.0033 (0.0026)	0.0027 (0.0032)	0.0131* (0.0026)
	[0.0055, 0.0072]			
GGO_MA	0.0142* (0.0023)	0.0163* (0.0031)	0.0191* (0.0033)	0.0106* (0.0035)
	[0.0119, 0.0147]			
GGO (VA)	0.0081* (0.0017)	0.0061* (0.0023)	0.0068* (0.0027)	0.0117* (0.0027)
GGO_MA (VA)	0.0101* (0.0018)	0.0114* (0.0024)	0.0123* (0.0017)	0.0056 (0.0030)
N =	900	306	288	540

GGO: Predicting Growth (2)

1980 – 2002

	Annual real investment growth (5-year horizon)			
	All Countries	Developed	EU Countries	Emerging
GGO	0.0408*	0.0211*	0.0203*	0.0704*
	(0.0060)	(0.0085)	(0.0093)	(0.0080)
	[0.0358, 0.0408]			
GGO_MA	0.0397*	0.0489*	0.0568*	0.0223
	(0.0071)	(0.0102)	(0.0107)	(0.0112)
	[0.0356, 0.0406]			
GGO (VA)	0.0347*	0.0252*	0.0284*	0.0552*
	(0.0055)	(0.0072)	(0.0075)	(0.0089)
GGO_MA (VA)	0.0235*	0.0345*	0.0371*	0.0052
	(0.0056)	(0.0075)	(0.0056)	(0.0088)
N =	900	306	288	540

Framework of Analysis

Consider **GGO**:

$$y_{i,t+5,5} = a_{i,0} + a_{i,1,t} GGO_{i,t} + u_{i,t+5,5}$$

Let $a_{i,1,t}$ vary with country characteristics:

- **Openness to foreign capital**

 - Capital Account Openness (IMF (0/1) & Quinn (0 / 4))

 - Equity Market Openness (BH Indicator & IFCI / IFCG)

 - Banking Sector Openness (NEW variable for 41 countries)

- Financial development

- Investor protection & political risk

Aligning Actual Growth and GGO: Openness (1)

Panel A: Capital Account Openness

	GDP	Investment
GGO_MA	0.0123* (0.0029)	0.0325* (0.0084)
GGO_MA x Capital Account Openness (IMF)	0.0032 (0.0044)	0.0183 (0.0137)
N=900		
GGO_MA	0.0060 (0.0053)	0.0167 (0.0171)
GGO_MA x Capital Account Degree of Openness (Quinn)	0.0105 (0.0074)	0.0343 (0.0242)
N=864		

Aligning Actual Growth and GGO: Openness (2)

Panel B: Equity Market Openness

	GDP	Investment
GGO_MA	0.0061 (0.0037)	0.0143 (0.0120)
GGO_MA x Official Equity Market Openness	0.0122* (0.0044)	0.0372* (0.0141)
N=900		
GGO_MA	0.0063 (0.0037)	0.0118 (0.0113)
GGO_MA x Equity Market Degree of Openness	0.0127* (0.0045)	0.0439* (0.0142)
N=900		

Aligning Actual Growth and GGO: Openness (3)

Panel C: Banking Sector Openness

	GDP	Investment
GGO_MA	0.0074 (0.0042)	0.0171 (0.0116)
GGO_MA x Banking Sector Openness	0.0118* (0.0048)	0.0419* (0.0145)
N=738		
GGO_MA	0.0072 (0.0049)	0.0071 (0.0130)
GGO_MA x Banking Sector Openness (First Sign)	0.0107* (0.0053)	0.0475* (0.0147)
N=738		

Financial Development and Openness

Rajan and Zingales (1998): Financial development relaxes financing constraints.

Fisman and Love (2004): Financial development helps align growth with global growth opportunities.

How important is financial development once we control for financial openness?

where

Financial development: Private Credit / GDP; Equity Market Turnover;
Equity Market Size / GDP

Aligning Actual Growth and GGO: Financial Development

	GDP	Investment
GGO_MA	0.0067 (0.0042)	0.0114 (0.0126)
GGO_MA x Private Credit	0.0116 (0.0060)	0.0408* (0.0166)
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GGO_MA	0.0167* (0.0027)	0.0488* (0.0089)
GGO_MA x Equity Market Turnover	-0.0084 (0.0053)	-0.0307 (0.0191)
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GGO_MA	0.0142* (0.0027)	0.0378* (0.0082)
GGO_MA x Equity Market Size	-0.0021 (0.0064)	0.0054 (0.0194)
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Aligning Actual Growth and GGO: Financial Development vs. Openness

	GDP	Investment
Low Private Credit/Closed Equity Market	0.0063 (0.0041)	0.0074 (0.0124)
Low Private Credit/Open Equity Market	0.0220* (0.0040)	0.0537* (0.0142)
High Private Credit/Closed Equity Market	0.0063 (0.0066)	0.0374 (0.0262)
High Private Credit/Open Equity Market	0.0152* (0.0029)	0.0489* (0.0089)
<i>Wald Tests:</i>		
Closed versus Open	15.17**	10.17**
Low versus High Private Credit	-	-

Aligning Actual Growth and GGO: External Finance Dependence (1)

	GDP	Investment		GDP	Investment
Low Ext. Fin. Dep./Low Private Credit	0.0113* (0.0036)	0.0187 (0.0107)	Low Ext. Fin. Dep./Closed Equity Market	0.0066 (0.0041)	0.0138 (0.0123)
Low Ext. Fin. Dep./High Private Credit	0.0133* (0.0056)	0.0574* (0.0132)	Low Ext. Fin. Dep./Open Equity Market	0.0175* (0.0041)	0.0488* (0.0117)
High Ext. Fin. Dep./Low Private Credit	0.0208* (0.0044)	0.0675* (0.0171)	High Ext. Fin. Dep./Closed Equity Market	0.0088 (0.0081)	0.0285 (0.0316)
High Ext. Fin. Dep./High Private Credit	0.0137* (0.0031)	0.0391* (0.0103)	High Ext. Fin. Dep./Open Equity Market	0.0183* (0.0029)	0.0507* (0.0098)
<i>Wald Tests:</i>			<i>Wald Tests:</i>		
Low versus High Private Credit	-	-	Closed versus Open	9.59**	8.89*
Low vs. High Ext. Fin. Dep.	6.47*	-	Low vs. High Ext. Fin. Dep.	0.24	0.48

Aligning Actual Growth and GGO: External Finance Dependence (2)

	GDP	Investment
GGO_MA	-0.0344 (0.0272)	-0.1477 (0.0890)
GGO_MA x Investment Intensity	0.1678 (0.0928)	0.6507* (0.3075)
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GGO_MA	0.0014 (0.0069)	-0.0080 (0.0233)
GGO_MA x External Finance Dependence	0.0430 (0.0216)	0.1580* (0.0758)
<hr/>		

Aligning Actual Growth and GGO: Investor Protection (1)

	GDP	Investment
GGO_MA	0.0079 (0.0060)	0.0070 (0.0203)
GGO_MA x Law and Order (ICRG)	0.0084 (0.0075)	0.0429 (0.0252)
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GGO_MA	0.0096 (0.0074)	0.0133 (0.0230)
GGO_MA x Quality of Institutions (ICRG)	0.0060 (0.0093)	0.0350 (0.0291)
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GGO_MA	0.0143* (0.0023)	0.0402* (0.0072)
GGO_MA x Insider Trading Prosecution	-0.0016 (0.0057)	-0.0026 (0.0183)
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Aligning Actual Growth and GGO: Investor Protection (2)

	GDP	Investment
Low Law and Order/Closed Equity Market	0.0062 (0.0038)	0.0134 (0.0122)
Low Law and Order/Open Equity Market	0.0173* (0.0058)	0.0367* (0.0177)
High Law and Order/Closed Equity Market	0.0073 (0.0187)	0.0167 (0.0522)
High Law and Order/Open Equity Market	0.0183* (0.0026)	0.0544* (0.0086)
<i>Wald Tests:</i>		
Closed versus Open	6.10*	1.47
Low versus High Law and Order	0.02	0.40

Aligning Actual Growth and GGO: Political Risk

	GDP	Investment
GGO_MA	-0.0064 (0.0091)	-0.0212 (0.0291)
GGO_MA x Political Risk (ICRG)	0.0289* (0.0124)	0.0850* (0.0394)
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GGO_MA	0.0002 (0.0071)	-0.2092* (0.0231)
GGO_MA x Investment Profile (ICRG)	0.0226 (0.0115)	0.0968* (0.0366)
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Test of Market Integration

Define “**Local Excess Growth Opportunities**” (*LEGO*):

$$LEGO_{i,t} = LGO_{i,t} - GGO_{i,t}$$

In a perfectly integrated world, local and global *PE* ratios should be very similar. *LEGO* should not predict local excess growth in open countries:

$$y_{i,t+5,5} - y_{w,t+5,5} = a_{i,0} + a_{i,1,t} LEGO_{i,t} + u_{i,t+5,5}$$

where

$$a_{i,1,t} = \alpha + \beta Open_{i,t}$$

Market Integration Results

		GDP Investment				GDP Investment	
LEGO_MA	(α)	0.0019 (0.0013)	0.0160* (0.0033)	LEGO_MA	(α)	0.0056 (0.0034)	0.0502* (0.0146)
LEGO_MA x Capital Account Openness (IMF) N = 415	(β)	-0.0019 (0.0016)	-0.0189* (0.0056)	LEGO_MA x Capital Account Degree of Openness (Quinn) N = 408	(β)	-0.0051 (0.0039)	-0.0530* (0.0174)
<i>Wald Tests:</i>				<i>Wald Tests:</i>			
Closed Countries ($\alpha=0$)		2.01	23.51*	Closed Countries ($\alpha=0$)		2.63	11.82*
Open Countries ($\alpha+\beta=0$)		0.00	0.41	Open Countries ($\alpha+\beta=0$)		0.05	0.09

When *Open* = Equity Market Openness or Banking Sector Openness we never reject integration ($\alpha + \beta = 0$) for open countries.

But often also do not reject for closed countries ($\alpha = 0$).

Power ?

Test of Market Segmentation

Define “World Growth Opportunities” (WGO) and “**Global Excess Growth Opportunities**” (*GEGO*):

$$WGO_t = \ln[PE_{w,t}'/W_{w,t}]$$

$$GEGO_{i,t} = GGO_{i,t} - WGO_t$$

In a completely segmented world, *GEGO* should not predict local excess growth:

$$y_{i,t+5,5} - y_{w,t+5,5} = a_{i,0} + a_{i,1,t} GEGO_{i,t} + u_{i,t+5,5}$$

where

$$a_{i,1,t} = \alpha + \beta Open_{i,t}$$

Market Segmentation Results

		<u>GDP</u>	<u>Investment</u>			<u>GDP</u>	<u>Investment</u>
GEGO_MA	(α)	0.0060 (0.0071)	0.0190 (0.0190)	GEGO_MA	(α)	-0.0006 (0.0086)	-0.0050 (0.0241)
GEGO_MA x Banking Sector Openness N = 738	(β)	0.0074 (0.0081)	0.0050 (0.0226)	GEGO_MA x Banking Sector Openness (First Sign) N = 738	(β)	0.0145 (0.0093)	0.0332 (0.0266)
<i>Wald Tests:</i>				<i>Wald Tests:</i>			
Closed Countries ($\alpha=0$)		0.72	1.00	Closed Countries ($\alpha=0$)		0.00	0.04
Open Countries ($\alpha+\beta=0$)		12.05*	3.90*	Open Countries ($\alpha+\beta=0$)		14.13*	6.31*

When *Open* = Capital Account Openness or Equity Market Openness, we reject segmentation ($\alpha + \beta = 0$) for open countries in 7 out of 8 cases.

For closed countries, we reject segmentation ($\alpha = 0$) in 2 out of 8 cases.

Testing Return Predictability (1)

Consider standard framework for excess return predictability test:

$$\begin{aligned}r_{i,t+1} &= u_i + b x_{i,t} + u_{i,t+1} \\x_{i,t} &= r x_{i,t-1} + e_{i,t}\end{aligned}$$

Kendall's (1954) small sample bias carries over to estimation of b if $\text{Corr}(u_{i,t}, e_{i,t}) \neq 0$ (eg Lewellen (2004)).

If GGO is “exogenous”, we could overcome this bias.

Testing Return Predictability (2)

Data

- non-overlapping annual USD excess returns
- for 34 developed (17) and emerging (17) countries
- from 1985 to 2002

Preliminary Results

- b is significantly negative for *LGO* and *GGO*.
- $\text{Corr}(u_{i,t}, e_{i,t})$ is lower for *GGO* than for *LGO*.

Conclusions

GGO as an exogenous measure of country-specific, global growth opportunities

Aligning actual growth with available global opportunities

- Countries with open equity markets and banking sectors are most successful at exploiting available growth opportunities
- Financial development is also important, but to a lesser degree

Testing Market Integration and Segmentation

- De jure and de facto openness (integration) generally coincide

GGO as a possible solution in small sample bias in return predictability tests?