

Financial Imbalances, Middle-East Industrialization, and CO₂ Emissions

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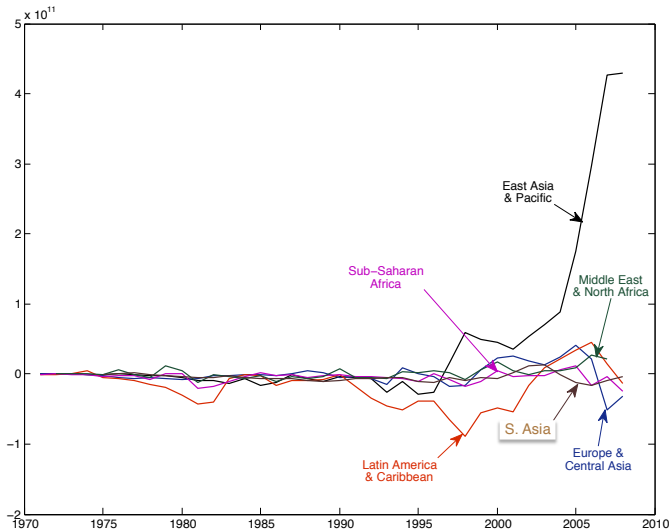
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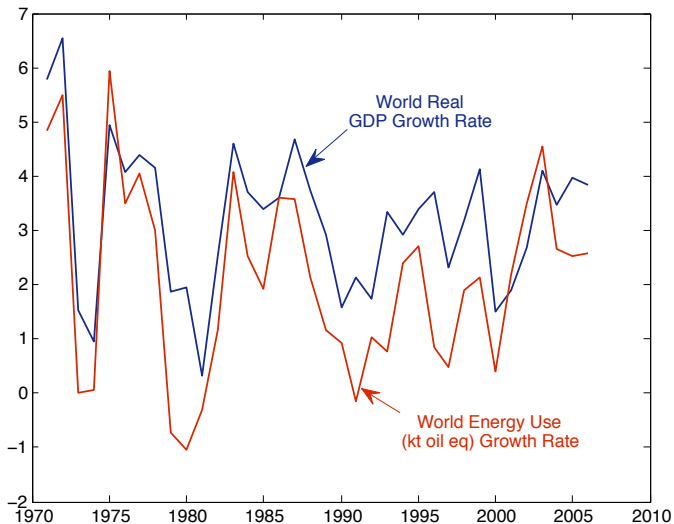
September 27, 2010



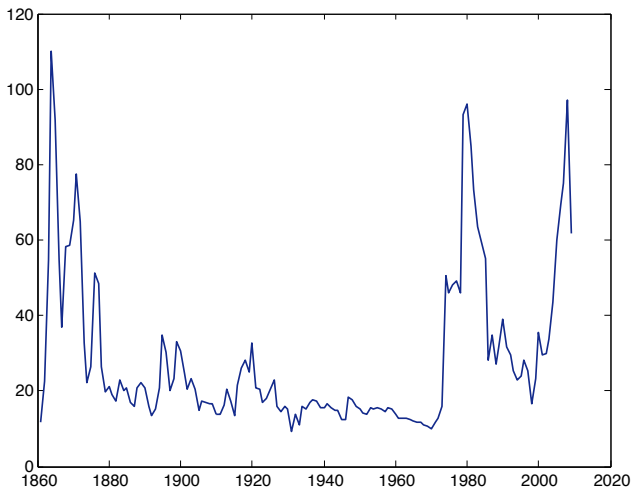
The Asia-Centered Story of Financial Imbalances



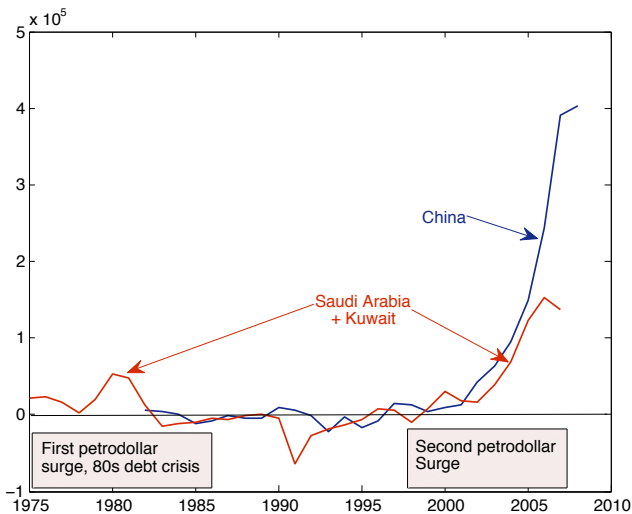
The Self-Perpetuating Secular Cycle Leading Up to the Crisis



Growth \Rightarrow Oil Demand \Rightarrow Real Price \uparrow \Rightarrow Crisis



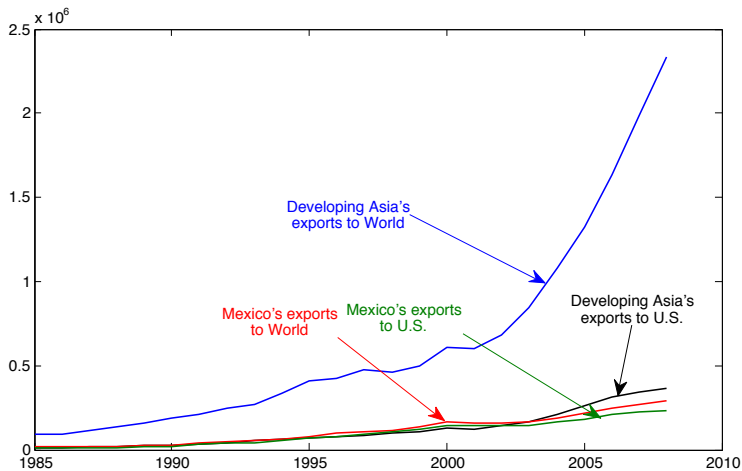
Destailizing Petrodollar Surges



Post-Crisis Recoveries: Export-led Growth & Industrialization

Mexican post-crisis recovery: NAFTA, industrialization, exports to U.S.

ASEAN post-crisis recovery: Industrialization, exports (\$m, IMF, DOT)



Trade, Industrialization, and Growth

Lewis, Rodrik, et al. – stylized facts on trade and industrialization:

- Industrialization is the true engine, not just exports
- Industrial policies are not sufficient, but seem (empirically) to be necessary for sustained growth
- They are essentially **WTO-friendly**, e.g. training, subsidies for high-value-added industrial tradables

Twist: Regional economies can coordinate investments and specializations for regional industrialization and trade

Spence, El-Erian, et al. – decoupling hypothesis, “new normal”:

- Slower growth in advanced economies continuing
- Increased reliance on *domestic* savings, and less dependence on foreign banks and investments

Twist: “Domestic” markets are too small, think regionally

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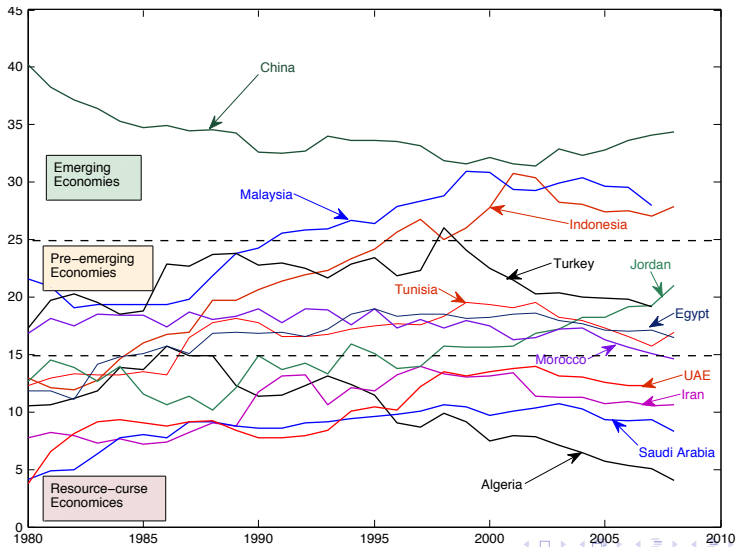
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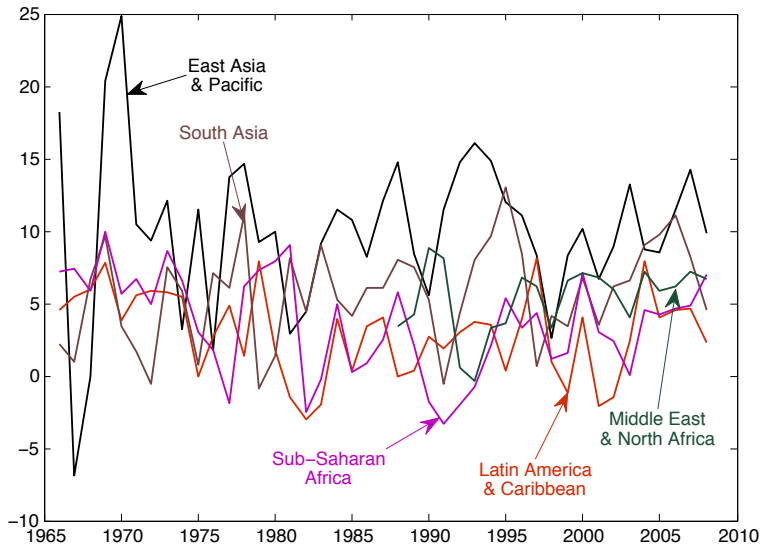
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Emerging, Pre-Emerging, and Resource-Curse Economies

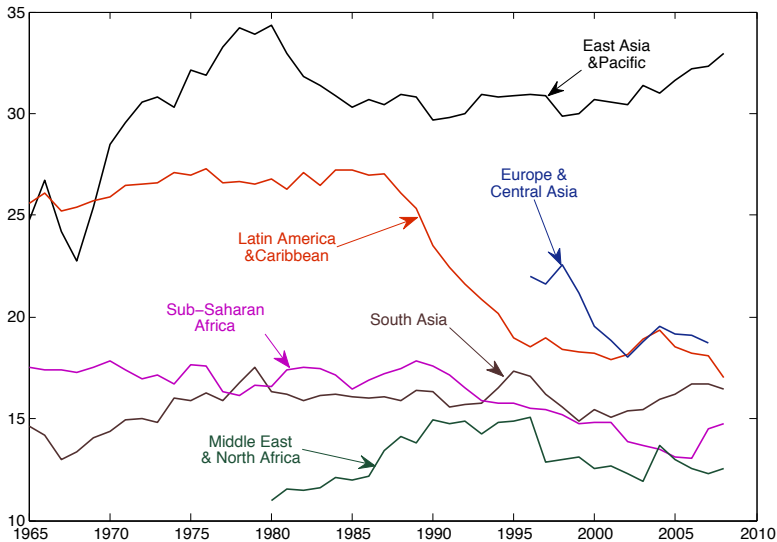
Manufacturing Value Added as percentage of GDP – WB, WDI



Manufacturing Growth Rates

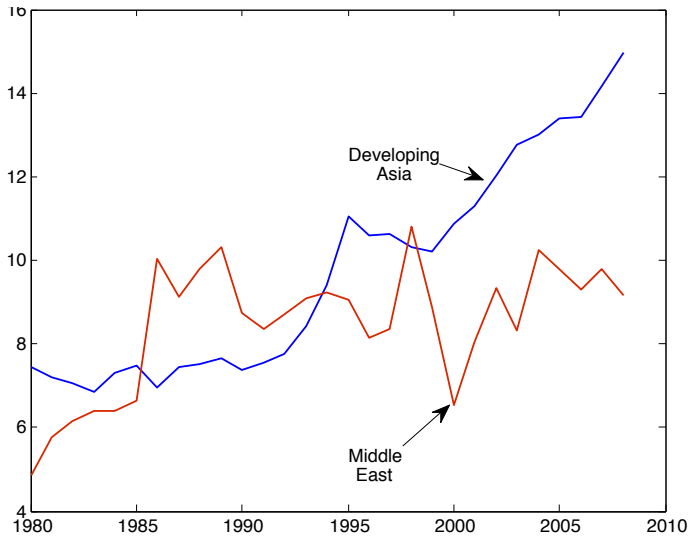


Manufacturing Growth Rates



Intraregional trade (especially after Asian crisis)

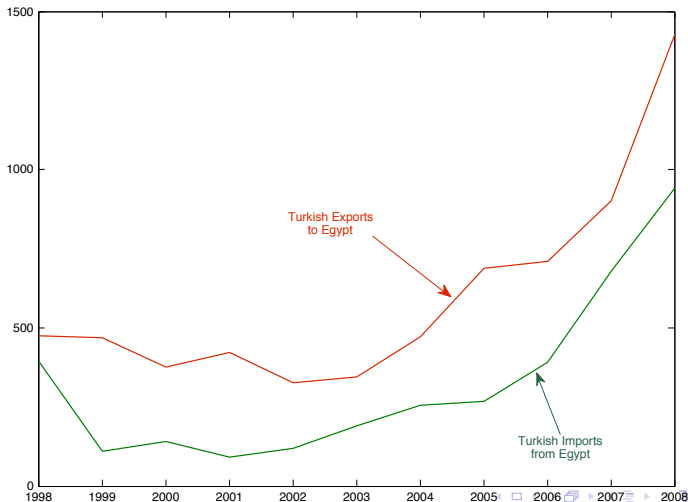
Intraregional trade as percentage of regional exports – IMF, DOT



Egypt and Turkey – Some Positive Developments

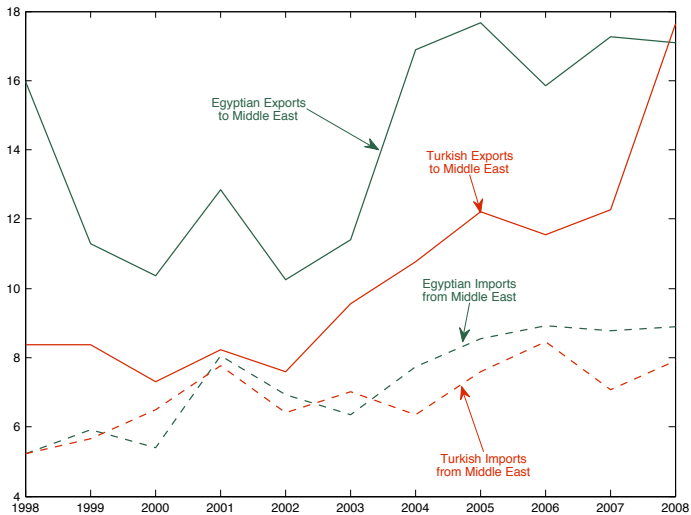
FTA signed 2005, in effect 2007 – *Data: IMF, DOT, Millions of Dollars*

http://www.mfti.gov.eg/english/downloads/Turkey_Egypt_FTArea.pdf



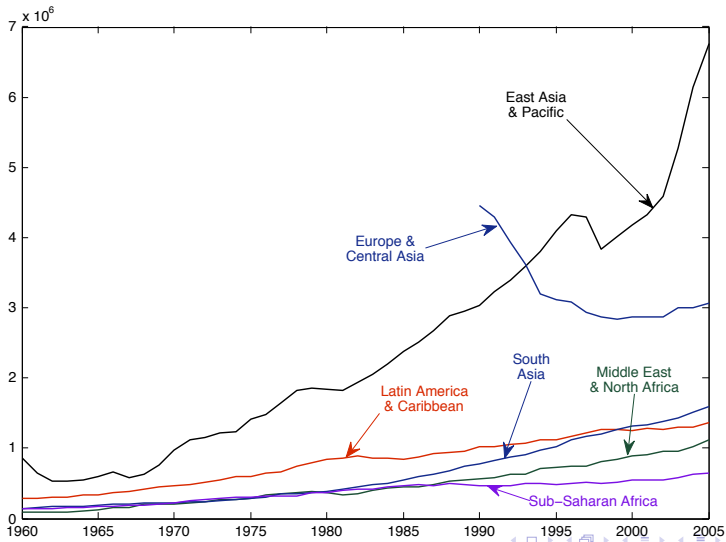
Much More Is Needed at the Regional Level

Percentage of Total Exports to and Imports from World, respectively – IMF, DOT



Region's Carbon Emissions (kT) Growth

Would Industrialization Cause Acceleration of CO₂ Emissions?



Dynamic Panel Analysis of CO₂ Emissions Growth

- Difference between industrial and manufacturing value added
- Construction and supporting industries as prime emitters
- Data: World Bank, WDI, 1969-2008
- Model to estimate:

$$\begin{aligned} \text{CO}_2\text{Emit GR}_{it} = & \beta_0 + \beta_1 \text{CO}_2\text{Emit GR}_{i(t-1)} + \beta_2 \text{Elect GR}_{it} + \beta_3 \text{GDP GR} \\ & + \beta_4 \text{Industr VA GR}_{it} + \beta_5 \text{Manuf VA GR}_{it} + \beta_6 \text{Urban Pop GR}_{it} + u_i + \epsilon_{it} \end{aligned}$$

- Estimation method: Arellano and Bond, *RES*, 1991.



Full Model Estimation

L.H.S. Variable = CO₂ Emissions (kT) growth

R.H.S. Variable	Coefficient	(Robust S.E.)
Lagged CO ₂ Emissions growth	-0.019*	(0.003)
Electric power consumption growth	-0.104	(0.115)
GDP growth	-0.189	(0.327)
Industry, value added growth	0.397*	(0.200)
Manufacturing, value added growth	-0.122	(0.152)
Urban population growth	1.931	(1.065)
Intercept	1.013	(2.794)
* = Significant at 0.05		
Number of Countries	118	
Time series for each country (where available)	1970–2008	
Total Number of Observations	2458	
$\chi^2_{(6)}$	232.47	<i>p</i> -value = 0.000
Specification Tests:		
Sargan Test of over-identifying Restrictions:	$\chi^2_{(103)} = 108.28,$	<i>p</i> -value = 0.342
Arellano-Bond Test of zero AC (order 2)	$z = -1.0631$	<i>P</i> -value = 0.288

Estimation Without Industrial Value Added

L.H.S. Variable = CO₂ Emissions (kT) growth

R.H.S. Variable	Coefficient	(Robust S.E.)
Lagged CO ₂ Emissions growth	-0.019*	(0.003)
Electric power consumption growth	-0.094	(0.114)
GDP growth	0.169	(0.256)
Manufacturing, value added growth	-0.011	(0.128)
Urban population growth	1.805	(1.072)
Intercept	1.103	(2.536)
* = Significant at 0.05		
Number of Countries	119	
Time series for each country (where available)	1970–2008	
Total Number of Observations	2490	
$\chi^2_{(5)}$	182.14	p -value = 0.000

Concluding Remarks

- A number of Middle-East countries are aggressively pursuing industrialization policies
- The big push in infrastructure building was funded by and executed during past oil booms
- Coordination is required to ensure observance of potential comparative advantage through early intraregional trade (beyond this paper)
- Whether or not industrial policies succeed at regional or individual-country levels, acceleration of CO₂ emissions is unlikely to be caused by accelerated manufacturing output, as long as construction booms and other non-manufacturing industrial output growth does not accelerate unreasonably

