

**Discussion of:**

**What Undermines Aid's Impact on Growth?**  
**by**  
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# Plan for Discussion

- Simple overview of RS story
- Mapping of theory to data
- Focus on structural equations in RS story
- Econometrics
- Big Picture: what have we learned and should we worry about it?

# 1. Rajan-Subramanian Story: Aid → Overvaluation → Dutch Disease

- Aid leads to overvaluation:

$$\text{Over}(j) = \gamma \text{Aid}(j) + v(j), \quad \gamma > 0$$

- Overvaluation leads to slower (faster) growth in labour- (capital-) intensive sectors:

$$\text{RelGrow}(j) = \beta \text{Over}(j) + e(j), \quad \beta < 0$$

*Note: RelGrow is defined as growth of all labour-intensive industries relative to all capital-intensive industries (one observation per country)*

## Stylized Version of RS, Cont'd

- Structural Model:

$$\text{Over}(j) = \gamma \text{Aid}(j) + v(j), \quad \gamma > 0$$

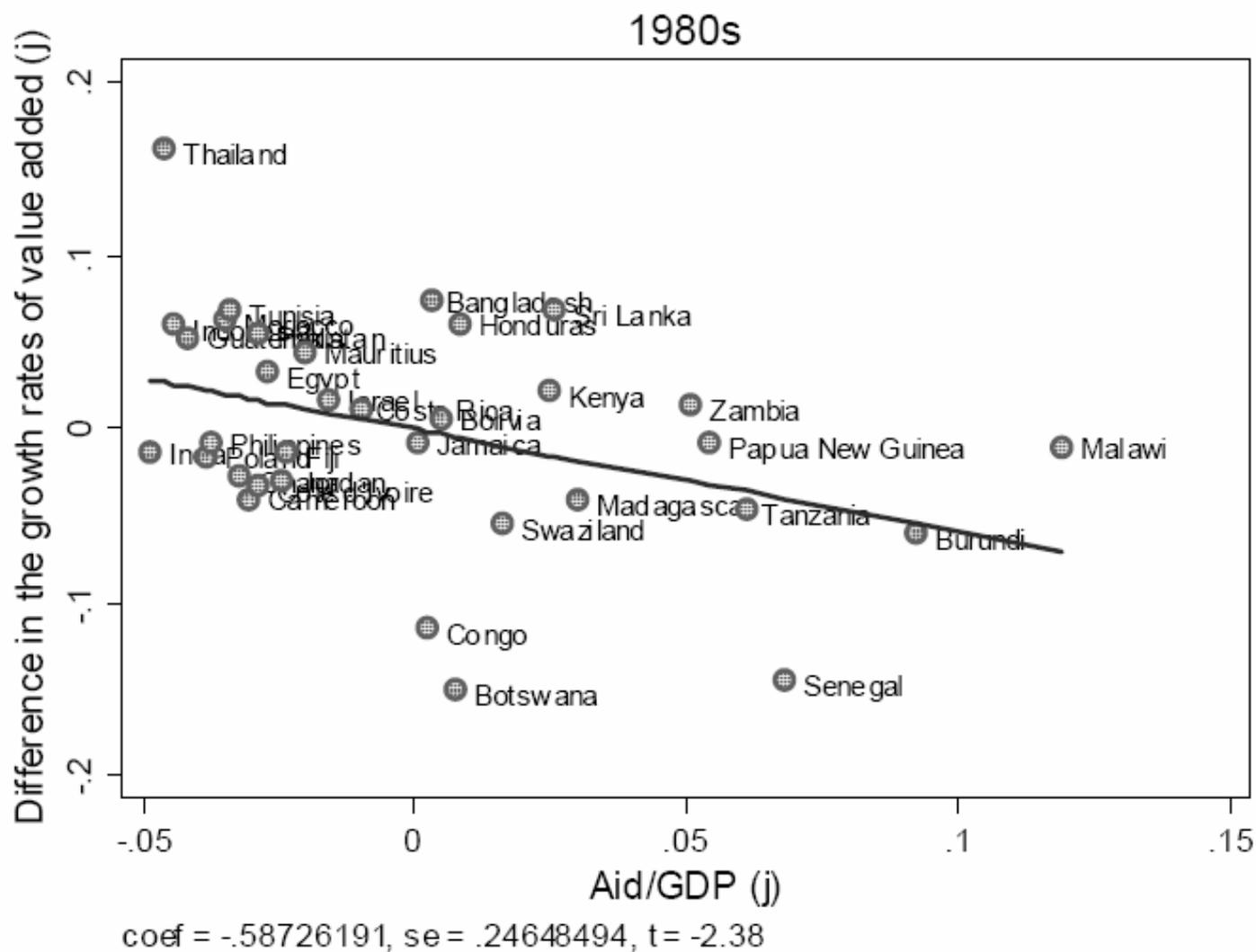
$$\text{RelGrow}(j) = \beta \text{Over}(j) + e(j), \quad \beta < 0$$

- Reduced-Form Model:

$$\text{RelGrow}(j) = \beta\gamma \text{Aid}(j) + \{\beta v(j) + e(j)\}$$

- RS estimate Reduced-Form Model using IV
  - concern is that aid is correlated with other determinants of overvaluation,  $\text{CORR}(\text{Aid}, v) \neq 0$
  - use clever instrument  $Z$  from other paper
  - exclusion restriction:  $E[Z(\beta v + e)] = 0$  (*non-trivial!*)

### Chart 3: Non-Parametric Depiction of Core Result



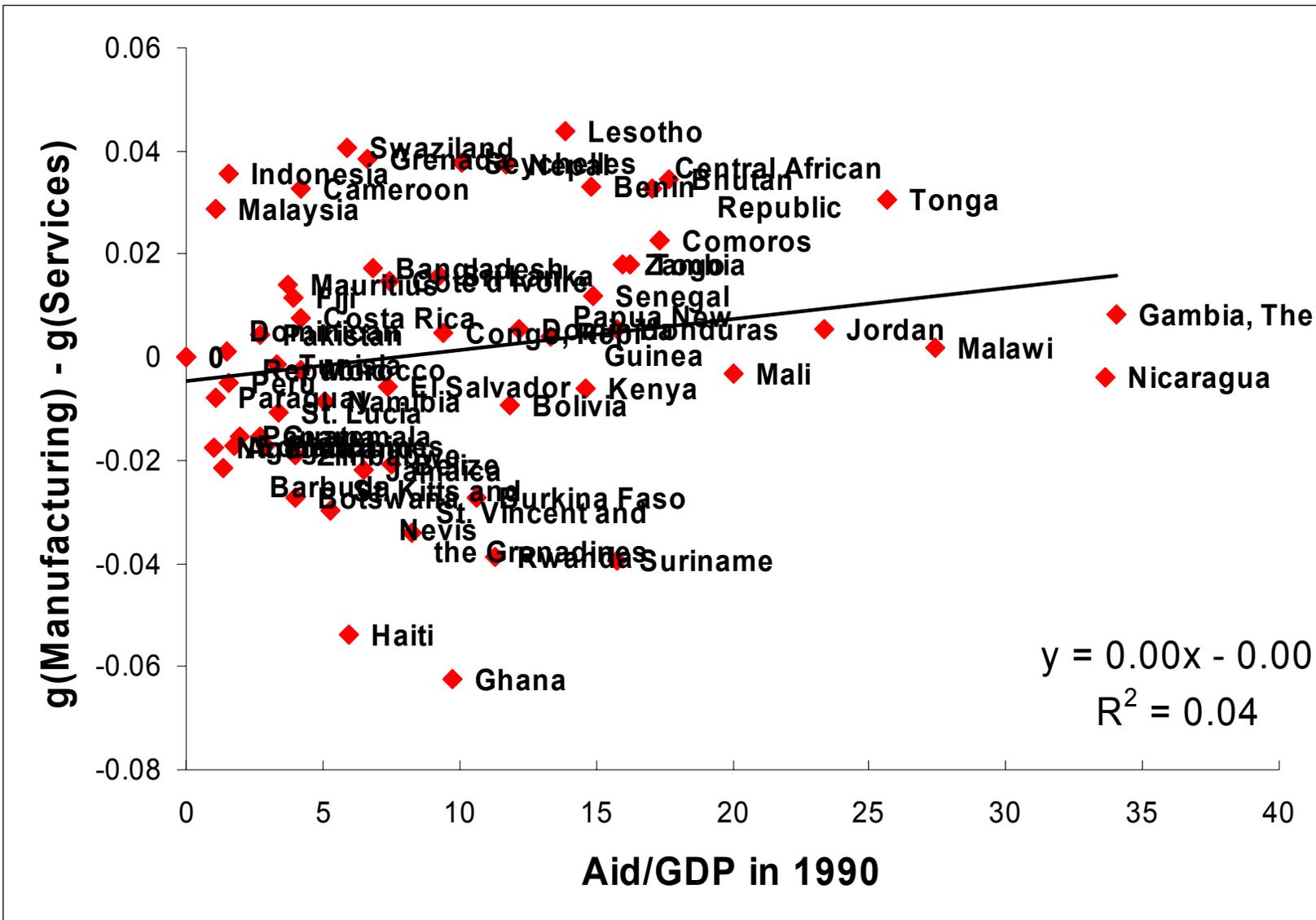
## 2. Mapping Theory to Data

- Inflows of foreign aid bid up costs of factors of production
- Adverse effect on tradeable sector which faces fixed world prices and can't pass on higher costs
- Tradeables production should grow more slowly than non-tradeables production in countries with lots of aid

## Theory to Data, Cont'd

- RS argue we can't observe which sectors are "tradeable"
- Or can we?
  - Most services are non-traded, most manufacturing is traded
- Is growth of manufacturing relative to services lower in countries that get lots of aid?
  - construct analog of RS Figure 3 using growth of manufacturing relative to services
  - correlation goes "wrong" way – more aid leads to *faster* growth in manufacturing relative to services

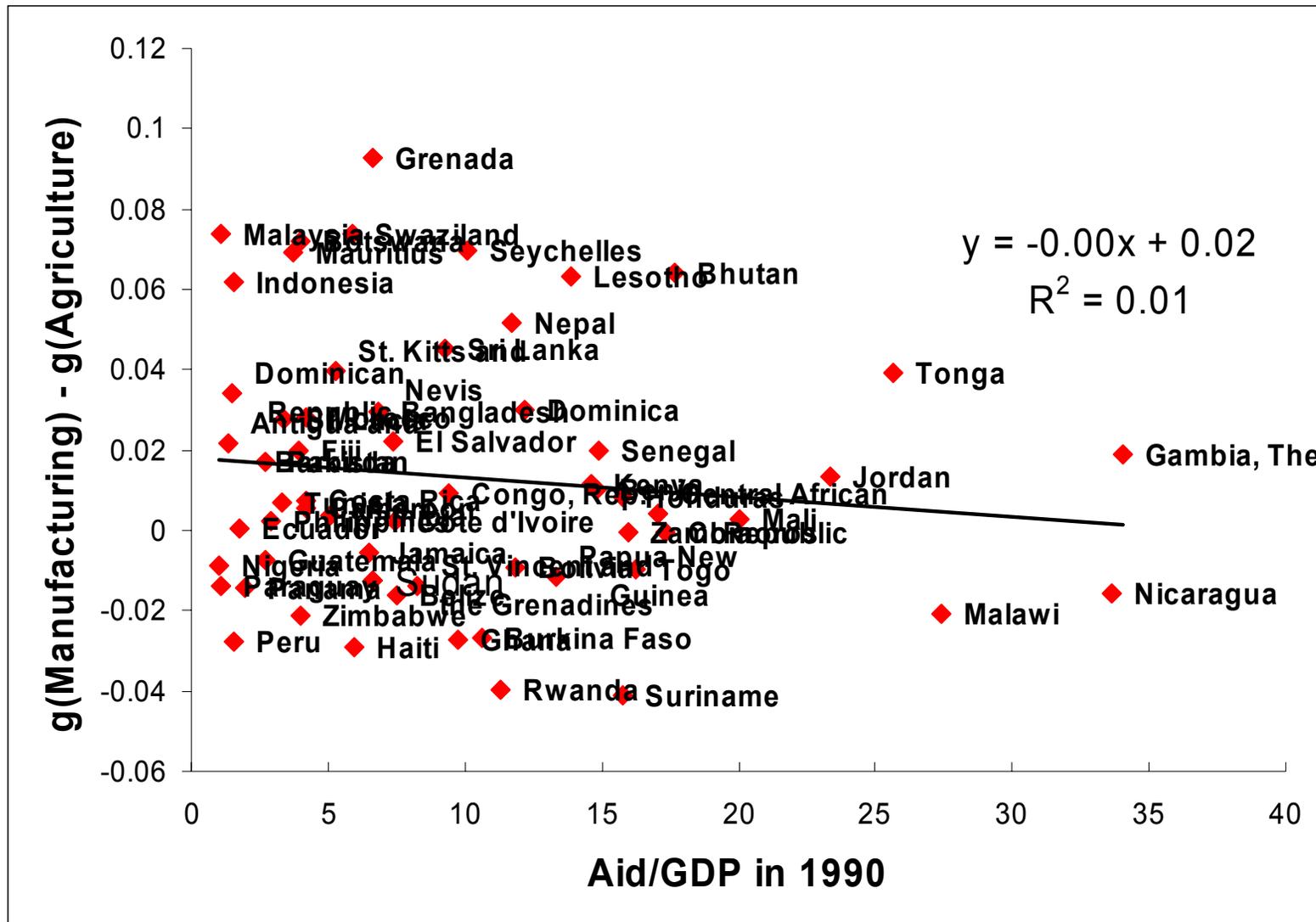
# My Version of Chart 3: Manufacturing = Tradeables, Services = Non-Tradeables



## From Theory to Data, Cont'd

- Instead of identifying tradeable sectors, RS identify sectors that are labour-intensive
  - *Key assumption*: labour is the factor whose price is bid up by aid
  - *Implication*: labour-intensive tradeable sectors will grow relatively slowly in countries with lots of aid
- Do aid inflows simply bid up the price of labour?
  - *skilled versus unskilled labour*: e.g. aid agencies “poach” highly-skilled administrators, translators, (economists?) etc. from government or private sector
  - *labour versus capital*: e.g. aid agencies monopolize all the 4-wheel drive vehicles

# Another Version of Chart 3: Manufacturing = Skill-Intensive, Agriculture = Unskilled-Intensive



### 3. Focus on Structural Equations

- Structural Model:

$$\begin{aligned}\text{Over}(j) &= \gamma \text{Aid}(j) + v(j), \quad \gamma > 0 \\ \text{RelGrow}(j) &= \beta \text{Over}(j) + e(j), \quad \beta < 0\end{aligned}$$

- Reduced-Form Model:

$$\text{RelGrow}(j) = \beta\gamma \text{Aid}(j) + \{\beta v(j) + e(j)\}$$

- RS spend most of paper trying to estimate the reduced-form parameter  $\beta\gamma$  using IV (i.e. all of Tables 2-7)
- What about two key structural equations?

# Structural Equation 1: Aid and Overvaluation

$$\text{Over}(j) = \gamma \text{Aid}(j) + v(j):$$

- RS offer us only one univariate IV regression described briefly in text p.25, and Figure 3
- Big(gish) previous literature on aid an overvaluations has looked at this with cross-country data (surveyed by Adam (2005), Bulir and Lane (2002))
  - existing evidence is pretty mixed
  - at most small effect, doubling aid leads to 18% appreciation over 5 years (Prati et al (2003))

# Aid and Overvaluation, Cont'd

## Why Do RS find a big effect?

- level versus rate of change of RXR?
- omitted variables correlated with aid (commodity dependence, institutions, terms of trade shocks)?
- mechanical correlation running through Balassa Samuelson correction?

*RS Two-Step:*  $p = \eta y + e$ ,  $e_{hat} = \gamma Aid + v$

*Effect of Aid on RXR:*  $p = \eta y + \phi Aid + u$

*Two methods are NOT identical since  $CORR(Aid, y) < *0$*

*Implication is that  $\phi \ll \gamma$*

# Aid and Overvaluation

<i>Dep Variable</i>	<b>All Countrys</b>		<b>RS Sample for 1990s</b>	
	<u>Overvaluation</u>	<u>Price Level</u>	<u>Overvaluation</u>	<u>Price Level</u>
Aid	-0.08 (0.19)	-0.10 (0.22)	1.71 (0.79)**	1.29 (0.81)
Per Capita GDP		0.002 (0.0005)***		0.001 (0.001)
# Countries	68	68	15	15

- Not clear that even the RS measure of overvaluation is correlated with aid in larger sample of aid recipients
- Relevant question is: does aid raise RXR?
  - evidence suggests not (cols 2 and 4)

## Structural Equation 2: Overvaluation and Relative Growth of Labour-Intensive Sectors

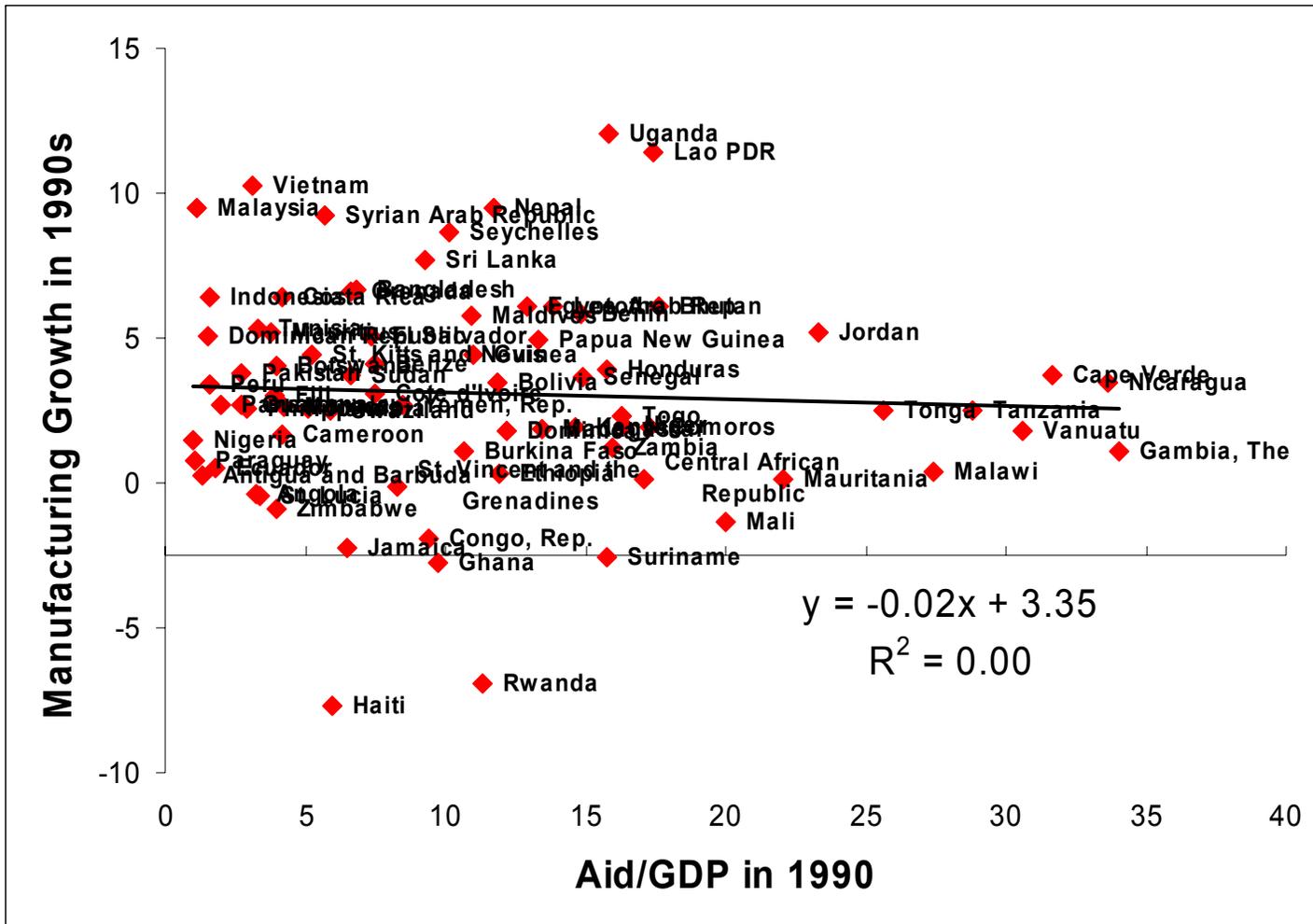
$$\text{RelGrow}(j) = \beta \text{Over}(j) + e(j)$$

- This is main novelty of paper, but we see it only Table 8
- Result a bit puzzling: why should overvaluation disproportionately affect labour-intensive sectors?
  - Results much stronger if we instead have relative growth of *export-intensive* sectors
- Direct evidence on how much overvaluation hurts *overall* manufacturing or export growth *in a big sample of countries* would be more convincing

## Effects of Overvaluation, Cont'd

- More important issues is effect of overvaluation on *overall* manufacturing growth
  - RS do this (Table 9), find *strongly negative effect!!!*
- Is this really robust?
  - not really effect of aid on average manufacturing growth, but on unweighted average of sectoral growth
  - artifact of small sample and/or unclustered standard errors?
- Concerns about composition of RS sample
  - Few really poor countries (only 3 of 28 HIPCs!)
  - Not very aid-dependent (average aid/GDP in 1990s sample is 3.6%, for all countries it is 7.6%)

# Aid and Manufacturing Growth in 1990s



## 4. Econometric Issues: Clustering

- Dependent variable is growth of sector  $i$  in country  $j$
- Country (industry) dummies soak up effects of country (industry) shocks only if all industries in a country (countries in an industry) respond the same way to the shock
- Correcting standard errors for correlations across countries *and* across industries is very important
  - RS do so for countries and industries *separately*, both corrections substantially increase standard errors
  - Significance will probably fall a lot if you correct for both at the same time

# Big Picture 1: Overview of RS Claims and Evidence

- RS: real overvaluation lowers growth in labour-intensive industries
  - nice application of RZ methodology, intuitive result
- RS: aid leads to real overvaluations
  - not yet convincing, probably artifact of small sample and/or definition of overvaluation
  - existing literature at most weakly supportive
- RS: aid slows growth in labour-intensive industries and in overall manufacturing
  - not yet convincing because of small sample problems
  - peculiar because of missing link from aid to overvaluation
  - *question posed in title remains to be answered*

## **Big Picture 2: How Much Should We Care About Aid-Induced Real Appreciations Anyway?**

- Aid accounts at most for a small share of variation in RXR
  - policy implication: give lots of aid, and address other fundamental sources of overvaluation
- Aid effect on RXR likely to be temporary anyhow
  - supply responses in non-traded sector
  - improvements in human capital of “poached” workers
- Are manufactured exports really the “engine of growth”?
  - depends on how much we believe stories about externalities