International Capital Mobility Through the Lens of Neoclassical Model:

Puzzles, Private Flows, and Global Imbalances

Laura Alfaro and Şebnem Kalemli-Özcan

Harvard and NBER, University of Houston and NBER

January 2010, AEA Meetings

Where does capital flow? Why does capital flow?

- Neoclassical Theory: Capital flows to high return countries
  - ⋆ High return: MPK-capital scarcity
  - ⋆ High return: High productivity/growth
  - ⋆ High return: Risk adjusted return/productivty
- No matter how we define high return, we have many puzzles related to international capital flows.
  - ⋆ Because international data does not seem to be fitting neoclassical predictions

Where does capital flow? Why does capital flow?

- Neoclassical Theory: Capital flows to high return countries
  - ⋆ High return: MPK-capital scarcity
  - ⋆ High return: High productivity/growth
  - ⋆ High return: Risk adjusted return/productivty
- No matter how we define high return, we have many puzzles related to international capital flows.
  - ⋆ Because international data does not seem to be fitting neoclassical predictions

Where does capital flow? Why does capital flow?

- Neoclassical Theory: Capital flows to high return countries
  - ⋆ High return: MPK-capital scarcity
  - ⋆ High return: High productivity/growth
  - ⋆ High return: Risk adjusted return/productivty
- No matter how we define high return, we have many puzzles related to international capital flows.
  - ⋆ Because international data does not seem to be fitting neoclassical predictions

Where does capital flow? Why does capital flow?

- Neoclassical Theory: Capital flows to high return countries
  - ⋆ High return: MPK-capital scarcity
  - ⋆ High return: High productivity/growth
  - ⋆ High return: Risk adjusted return/productivty
- No matter how we define high return, we have many puzzles related to international capital flows.
  - ⋆ Because international data does not seem to be fitting neoclassical predictions

Puzzles: Feldstein-Horioka

- Feldstein-Horioka: Savings and Investment are highly correlated, implying limited degree of capital mobility
  - ⋆ S-I correlation may not be informative about capital mobility
  - ⋆ Many factors can simultaneously drive both saving and investment such as global shocks, government policies, demographic factors (Obstfeld, 1995)

Puzzles: Feldstein-Horioka

- Feldstein-Horioka: Savings and Investment are highly correlated, implying limited degree of capital mobility
  - ⋆ S-I correlation may not be informative about capital mobility
  - ⋆ Many factors can simultaneously drive both saving and investment such as global shocks, government policies, demographic factors (Obstfeld, 1995)

Puzzles: Feldstein-Horioka

- Feldstein-Horioka: Savings and Investment are highly correlated, implying limited degree of capital mobility
  - ⋆ S-I correlation may not be informative about capital mobility
  - ⋆ Many factors can simultaneously drive both saving and investment such as global shocks, government policies, demographic factors (Obstfeld, 1995)

Puzzles: Lucas Paradox

- Lucas (1990): Capital should go from capital abundant-low MPK USA to capital scarce-high MPK India assuming same level of TFP (A)
  - ⋆ But, TFP (A) is not the same across countries.
  - ⋆ Lucas adjusts MPKs (accounting for human capital) and shows there no MPK differences
  - ⋆ Predictions of the neoclassical model with no role for productivity difference are not informative.

Puzzles: Lucas Paradox

- Lucas (1990): Capital should go from capital abundant-low MPK USA to capital scarce-high MPK India assuming same level of TFP (A)
  - ⋆ But, TFP (A) is not the same across countries.
  - ⋆ Lucas adjusts MPKs (accounting for human capital) and shows there no MPK differences
  - ⋆ Predictions of the neoclassical model with no role for productivity difference are not informative.

Puzzles: Lucas Paradox

- Lucas (1990): Capital should go from capital abundant-low MPK USA to capital scarce-high MPK India assuming same level of TFP (A)
  - ⋆ But, TFP (A) is not the same across countries.
  - ⋆ Lucas adjusts MPKs (accounting for human capital) and shows there no MPK differences
  - ⋆ Predictions of the neoclassical model with no role for productivity difference are not informative.

Puzzles: Lucas Paradox

- Lucas (1990): Capital should go from capital abundant-low MPK USA to capital scarce-high MPK India assuming same level of TFP (A)
  - ⋆ But, TFP (A) is not the same across countries.
  - ⋆ Lucas adjusts MPKs (accounting for human capital) and shows there no MPK differences
  - ⋆ Predictions of the neoclassical model with no role for productivity difference are not informative.

Puzzles: Lucas Paradox

- Caselli-Feyrer (2007): A fresh perspective on MPK adjustment
  - ⋆ MPKs measured as $\alpha \frac{Y}{K}$ will reflect productivity differences.
  - ⋆ MPK differences go away when adjusted with relative price of capital
  - ⋆ The relative price of output is low in poor countries; the use of PPP prices overestimate the market value of the productivity of physical capital.
- But, if there are no differences in MPKs then why the capital is flowing around?

Puzzles: Lucas Paradox

- Caselli-Feyrer (2007): A fresh perspective on MPK adjustment
  - ⋆ MPKs measured as $\alpha \frac{Y}{K}$ will reflect productivity differences.
  - ⋆ MPK differences go away when adjusted with relative price of capital
  - ⋆ The relative price of output is low in poor countries; the use of PPP prices overestimate the market value of the productivity of physical capital.
- But, if there are no differences in MPKs then why the capital is flowing around?

Puzzles: Lucas Paradox

- Caselli-Feyrer (2007): A fresh perspective on MPK adjustment
  - ⋆ MPKs measured as $\alpha \frac{Y}{K}$ will reflect productivity differences.
  - ⋆ MPK differences go away when adjusted with relative price of capital
  - ⋆ The relative price of output is low in poor countries; the use of PPP prices overestimate the market value of the productivity of physical capital.
- But, if there are no differences in MPKs then why the capital is flowing around?

Puzzles: Lucas Paradox

- Caselli-Feyrer (2007): A fresh perspective on MPK adjustment
  - ⋆ MPKs measured as $\alpha \frac{Y}{K}$ will reflect productivity differences.
  - ⋆ MPK differences go away when adjusted with relative price of capital
  - ⋆ The relative price of output is low in poor countries; the use of PPP prices overestimate the market value of the productivity of physical capital.
- But, if there are no differences in MPKs then why the capital is flowing around?

Puzzles: Lucas Paradox

- Caselli-Feyrer (2007): A fresh perspective on MPK adjustment
  - ⋆ MPKs measured as $\alpha \frac{Y}{K}$ will reflect productivity differences.
  - ⋆ MPK differences go away when adjusted with relative price of capital
  - ⋆ The relative price of output is low in poor countries; the use of PPP prices overestimate the market value of the productivity of physical capital.
- But, if there are no differences in MPKs then why the capital is flowing around?

Broader Question: Does capital flows to productive places?

- Alfaro, Kalemli-Ozcan, and Volosovych (2008) show that once the institutional quality differences across countries are accounted for, Lucas Paradox disappears.
  - ⋆ Lucas Paradox: Private flows (FDI and equity) going from poor to rich countries
  - ⋆ Institutions are the most important determinant of growth and productivity (Acemoglu, Johnson and Robinson)
- Gourinchas and Jeanne (2009): Show that least productive places in Africa receive more capital then most productive places in Asia.
- So, another puzzle?

Broader Question: Does capital flows to productive places?

- Alfaro, Kalemli-Ozcan, and Volosovych (2008) show that once the institutional quality differences across countries are accounted for, Lucas Paradox disappears.
  - ⋆ Lucas Paradox: Private flows (FDI and equity) going from poor to rich countries
  - ⋆ Institutions are the most important determinant of growth and productivity (Acemoglu, Johnson and Robinson)
- Gourinchas and Jeanne (2009): Show that least productive places in Africa receive more capital then most productive places in Asia.
- So, another puzzle?

Broader Question: Does capital flows to productive places?

- Alfaro, Kalemli-Ozcan, and Volosovych (2008) show that once the institutional quality differences across countries are accounted for, Lucas Paradox disappears.
  - ⋆ Lucas Paradox: Private flows (FDI and equity) going from poor to rich countries
  - ⋆ Institutions are the most important determinant of growth and productivity (Acemoglu, Johnson and Robinson)
- Gourinchas and Jeanne (2009): Show that least productive places in Africa receive more capital then most productive places in Asia.
- So, another puzzle?

Broader Question: Does capital flows to productive places?

- Alfaro, Kalemli-Ozcan, and Volosovych (2008) show that once the institutional quality differences across countries are accounted for, Lucas Paradox disappears.
  - ⋆ Lucas Paradox: Private flows (FDI and equity) going from poor to rich countries
  - ⋆ Institutions are the most important determinant of growth and productivity (Acemoglu, Johnson and Robinson)
- Gourinchas and Jeanne (2009): Show that least productive places in Africa receive more capital then most productive places in Asia.
- So, another puzzle?

Broader Question: Does capital flows to productive places?

- Alfaro, Kalemli-Ozcan, and Volosovych (2008) show that once the institutional quality differences across countries are accounted for, Lucas Paradox disappears.
  - ⋆ Lucas Paradox: Private flows (FDI and equity) going from poor to rich countries
  - ⋆ Institutions are the most important determinant of growth and productivity (Acemoglu, Johnson and Robinson)
- Gourinchas and Jeanne (2009): Show that least productive places in Africa receive more capital then most productive places in Asia.
- So, another puzzle?

Our Approach and Contribution

- The key in the investigation of "where" and "why" capital flows, relative to the neoclassical benchmark is measurement and comparability:
  - ⋆ How do we measure capital mobility?
  - ⋆ What do we mean by high return and/or high productivity?
  - ⋆ Which measures of capital mobility are comparable across countries?
- Highly productive places based on MPK may not be so productive; MPK adjustments can account for the productivity differences (Lucas, 1990; Caselli-Feyrer, 2007)
- Rich, capital abundant places can also be productive; high A. (Forbes, 2008; Kalemli-Ozcan et al., 2009)

Our Approach and Contribution

- The key in the investigation of "where" and "why" capital flows, relative to the neoclassical benchmark is measurement and comparability:
  - ⋆ How do we measure capital mobility?
  - ⋆ What do we mean by high return and/or high productivity?
  - ⋆ Which measures of capital mobility are comparable across countries?
- Highly productive places based on MPK may not be so productive; MPK adjustments can account for the productivity differences (Lucas, 1990; Caselli-Feyrer, 2007)
- Rich, capital abundant places can also be productive; high A. (Forbes, 2008; Kalemli-Ozcan et al., 2009)

Our Approach and Contribution

- The key in the investigation of "where" and "why" capital flows, relative to the neoclassical benchmark is measurement and comparability:
  - ⋆ How do we measure capital mobility?
  - ⋆ What do we mean by high return and/or high productivity?
  - ⋆ Which measures of capital mobility are comparable across countries?
- Highly productive places based on MPK may not be so productive; MPK adjustments can account for the productivity differences (Lucas, 1990; Caselli-Feyrer, 2007)
- Rich, capital abundant places can also be productive; high A. (Forbes, 2008; Kalemli-Ozcan et al., 2009)

Our Approach and Contribution

- The key in the investigation of "where" and "why" capital flows, relative to the neoclassical benchmark is measurement and comparability:
  - ⋆ How do we measure capital mobility?
  - ⋆ What do we mean by high return and/or high productivity?
  - ⋆ Which measures of capital mobility are comparable across countries?
- Highly productive places based on MPK may not be so productive; MPK adjustments can account for the productivity differences (Lucas, 1990; Caselli-Feyrer, 2007)
- Rich, capital abundant places can also be productive; high A. (Forbes, 2008; Kalemli-Ozcan et al., 2009)

Our Approach and Contribution

- The key in the investigation of "where" and "why" capital flows, relative to the neoclassical benchmark is measurement and comparability:
  - ⋆ How do we measure capital mobility?
  - ⋆ What do we mean by high return and/or high productivity?
  - ⋆ Which measures of capital mobility are comparable across countries?
- Highly productive places based on MPK may not be so productive; MPK adjustments can account for the productivity differences (Lucas, 1990; Caselli-Feyrer, 2007)
- Rich, capital abundant places can also be productive; high A. (Forbes, 2008; Kalemli-Ozcan et al., 2009)

Measuring Capital Flows and Comparability

- Three main yardsticks: Current account balance (CA), returns (MPK), and actual quantity of capital flows (FDI, equity, debt).
  - ⋆ CA: Reflects non-private, non-market activities, while the neoclassical predictions are about private-market behavior.
  - ⋆ MPK: Not comparable across countries given the grave misallocation of capital within the countries. (Banerjee and Duflo, 1995)
  - ⋆ Actual quantity of flows: Similar issue to CA; must be careful about private versus public flows

Measuring Capital Flows and Comparability

- Three main yardsticks: Current account balance (CA), returns (MPK), and actual quantity of capital flows (FDI, equity, debt).
  - ⋆ CA: Reflects non-private, non-market activities, while the neoclassical predictions are about private-market behavior.
  - ⋆ MPK: Not comparable across countries given the grave misallocation of capital within the countries. (Banerjee and Duflo, 1995)
  - ⋆ Actual quantity of flows: Similar issue to CA; must be careful about private versus public flows

Measuring Capital Flows and Comparability

- Three main yardsticks: Current account balance (CA), returns (MPK), and actual quantity of capital flows (FDI, equity, debt).
  - ⋆ CA: Reflects non-private, non-market activities, while the neoclassical predictions are about private-market behavior.
  - ⋆ MPK: Not comparable across countries given the grave misallocation of capital within the countries. (Banerjee and Duflo, 1995)
  - ⋆ Actual quantity of flows: Similar issue to CA; must be careful about private versus public flows

Measuring Capital Flows and Comparability

- Three main yardsticks: Current account balance (CA), returns (MPK), and actual quantity of capital flows (FDI, equity, debt).
  - ⋆ CA: Reflects non-private, non-market activities, while the neoclassical predictions are about private-market behavior.
  - ⋆ MPK: Not comparable across countries given the grave misallocation of capital within the countries. (Banerjee and Duflo, 1995)
  - ⋆ Actual quantity of flows: Similar issue to CA; must be careful about private versus public flows

Contribution and Results

- We document the patterns of international capital mobility in the last 40 years:
  - ⋆ Both for developing countries and the whole world
  - ⋆ By using both the current account and financial flows
  - ⋆ By focusing on both private and public flows
  - ⋆ Investigating dynamics of each decade, 70s, 80s, 90s.
- Recent findings on "puzzles" of capital flows due to:
  - ⋆ Dominance of public/aid flows for poor and unproductive countries.
  - ⋆ Changes in the dynamic patterns and composition of capital flows due to global imbalances.

Contribution and Results

- We document the patterns of international capital mobility in the last 40 years:
  - ⋆ Both for developing countries and the whole world
  - ⋆ By using both the current account and financial flows
  - ⋆ By focusing on both private and public flows
  - ⋆ Investigating dynamics of each decade, 70s, 80s, 90s.
- Recent findings on "puzzles" of capital flows due to:
  - ⋆ Dominance of public/aid flows for poor and unproductive countries.
  - ⋆ Changes in the dynamic patterns and composition of capital flows due to global imbalances.

Contribution and Results

- We document the patterns of international capital mobility in the last 40 years:
  - ⋆ Both for developing countries and the whole world
  - ⋆ By using both the current account and financial flows
  - ⋆ By focusing on both private and public flows
  - ⋆ Investigating dynamics of each decade, 70s, 80s, 90s.
- Recent findings on "puzzles" of capital flows due to:
  - ⋆ Dominance of public/aid flows for poor and unproductive countries.
  - ⋆ Changes in the dynamic patterns and composition of capital flows due to global imbalances.

Contribution and Results

- We document the patterns of international capital mobility in the last 40 years:
  - ⋆ Both for developing countries and the whole world
  - ⋆ By using both the current account and financial flows
  - ⋆ By focusing on both private and public flows
  - ⋆ Investigating dynamics of each decade, 70s, 80s, 90s.
- Recent findings on "puzzles" of capital flows due to:
  - ⋆ Dominance of public/aid flows for poor and unproductive countries.
  - ⋆ Changes in the dynamic patterns and composition of capital flows due to global imbalances.

Misallocation

- Misallocation of resources across firms can explain 40-60% the cross-country TFP differences.
  - ⋆ Restuccia and Rogerson (2008), Hsieh and Klenow (2009), Bartelsman et al. (2009), Alfaro et al. (2009).
- Evidence on misallocation of capital: extensive variation in firm level MPKs and interest rates that firms borrow at.
  - ⋆ Median r=15 %; MPK=40%; Kalemli-Ozcan and Sorensen (2009)
  - ⋆ Banerjee and Duflo (2005), Udry and Anagol (2006), Kremer (2009)
- Comparing adjusted-MPKs across countries implies
  - ⋆ Price adjusted MPK are same and below 10% everywhere.
  - ⋆ Efficient allocation within countries; $P_j MPK_j = P_1 MPK_1, \forall j = 1...K$; clearly violated in data.

Misallocation

- Misallocation of resources across firms can explain 40-60% the cross-country TFP differences.
  - ⋆ Restuccia and Rogerson (2008), Hsieh and Klenow (2009), Bartelsman et al. (2009), Alfaro et al. (2009).
- Evidence on misallocation of capital: extensive variation in firm level MPKs and interest rates that firms borrow at.
  - ⋆ Median r=15 %; MPK=40%; Kalemli-Ozcan and Sorensen (2009)
  - ⋆ Banerjee and Duflo (2005), Udry and Anagol (2006), Kremer (2009)
- Comparing adjusted-MPKs across countries implies
  - ⋆ Price adjusted MPK are same and below 10% everywhere.
  - ⋆ Efficient allocation within countries; $P_j MPK_j = P_1 MPK_1, \forall j = 1...K$; clearly violated in data.

Misallocation

- Misallocation of resources across firms can explain 40-60% the cross-country TFP differences.
  - ⋆ Restuccia and Rogerson (2008), Hsieh and Klenow (2009), Bartelsman et al. (2009), Alfaro et al. (2009).
- Evidence on misallocation of capital: extensive variation in firm level MPKs and interest rates that firms borrow at.
  - ⋆ Median r=15 %; MPK=40%; Kalemli-Ozcan and Sorensen (2009)
  - ⋆ Banerjee and Duflo (2005), Udry and Anagol (2006), Kremer (2009)
- Comparing adjusted-MPKs across countries implies
  - ⋆ Price adjusted MPK are same and below 10% everywhere.
  - ⋆ Efficient allocation within countries; $P_j MPK_j = P_1 MPK_1, \forall j = 1...K$; clearly violated in data.

Misallocation

- Misallocation of resources across firms can explain 40-60% the cross-country TFP differences.
  - ⋆ Restuccia and Rogerson (2008), Hsieh and Klenow (2009), Bartelsman et al. (2009), Alfaro et al. (2009).
- Evidence on misallocation of capital: extensive variation in firm level MPKs and interest rates that firms borrow at.
  - ⋆ Median r=15 %; MPK=40%; Kalemli-Ozcan and Sorensen (2009)
  - ⋆ Banerjee and Duflo (2005), Udry and Anagol (2006), Kremer (2009)
- Comparing adjusted-MPKs across countries implies
  - ⋆ Price adjusted MPK are same and below 10% everywhere.
  - ⋆ Efficient allocation within countries; $P_j MPK_j = P_1 MPK_1, \forall j = 1...K$; clearly violated in data.

Misallocation

- Misallocation of resources across firms can explain 40-60% the cross-country TFP differences.
  - ⋆ Restuccia and Rogerson (2008), Hsieh and Klenow (2009), Bartelsman et al. (2009), Alfaro et al. (2009).
- Evidence on misallocation of capital: extensive variation in firm level MPKs and interest rates that firms borrow at.
  - ⋆ Median r=15 %; MPK=40%; Kalemli-Ozcan and Sorensen (2009)
  - ⋆ Banerjee and Duflo (2005), Udry and Anagol (2006), Kremer (2009)
- Comparing adjusted-MPKs across countries implies
  - ⋆ Price adjusted MPK are same and below 10% everywhere.
  - ⋆ Efficient allocation within countries; $P_j MPK_j = P_1 MPK_1, \forall j = 1...K$; clearly violated in data.

Remaining Measures for Capital Flows

- Since we cannot use MPKs, we turn to CA and financial flows.
- See if these measures of capital flows are correlated with high productivity.
- Gourinchas and Jeanne (2009): The correlation between capital flows and productivity is negative or zero, and it is a puzzle that it is not positive.

Remaining Measures for Capital Flows

- Since we cannot use MPKs, we turn to CA and financial flows.
- See if these measures of capital flows are correlated with high productivity.
- Gourinchas and Jeanne (2009): The correlation between capital flows and productivity is negative or zero, and it is a puzzle that it is not positive.

Remaining Measures for Capital Flows

- Since we cannot use MPKs, we turn to CA and financial flows.
- See if these measures of capital flows are correlated with high productivity.
- Gourinchas and Jeanne (2009): The correlation between capital flows and productivity is negative or zero, and it is a puzzle that it is not positive.

Data

- GJ sample: 67 developing countries (non-OECD) for 1980–2000, sources: LM, PWT
- We use same data and also extend it to more developing countries and years, sources: LM, IMF, WB.
  - ⋆ Total Net Flows: CA/GDP as the current account balance normalized by GDP, averaged over time.
  - ⋆ Total Net Flows: Change in net total assets and liabilities between first and last year, normalized by first year GDP.
  - ⋆ Net Equity Flows and Net Debt Flows: Similar definition to total
  - ⋆ Aid Flows: Net overseas assistance from the Development Assistance Committee online database, Roodman (2005).

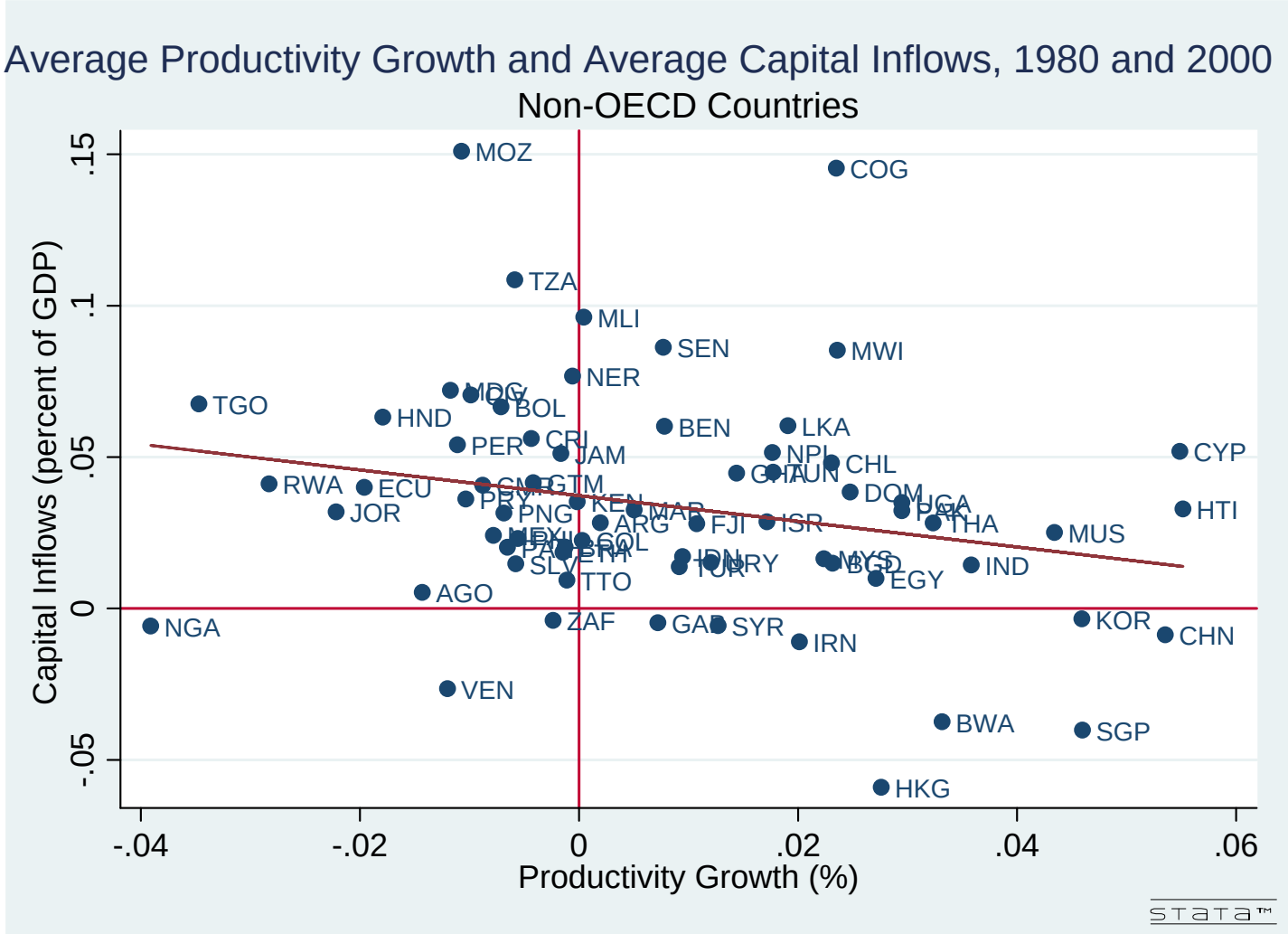
Data

- GJ sample: 67 developing countries (non-OECD) for 1980–2000, sources: LM, PWT
- We use same data and also extend it to more developing countries and years, sources: LM, IMF, WB.
  - ⋆ Total Net Flows: CA/GDP as the current account balance normalized by GDP, averaged over time.
  - ⋆ Total Net Flows: Change in net total assets and liabilities between first and last year, normalized by first year GDP.
  - ⋆ Net Equity Flows and Net Debt Flows: Similar definition to total
  - ⋆ Aid Flows: Net overseas assistance from the Development Assistance Committee online database, Roodman (2005).

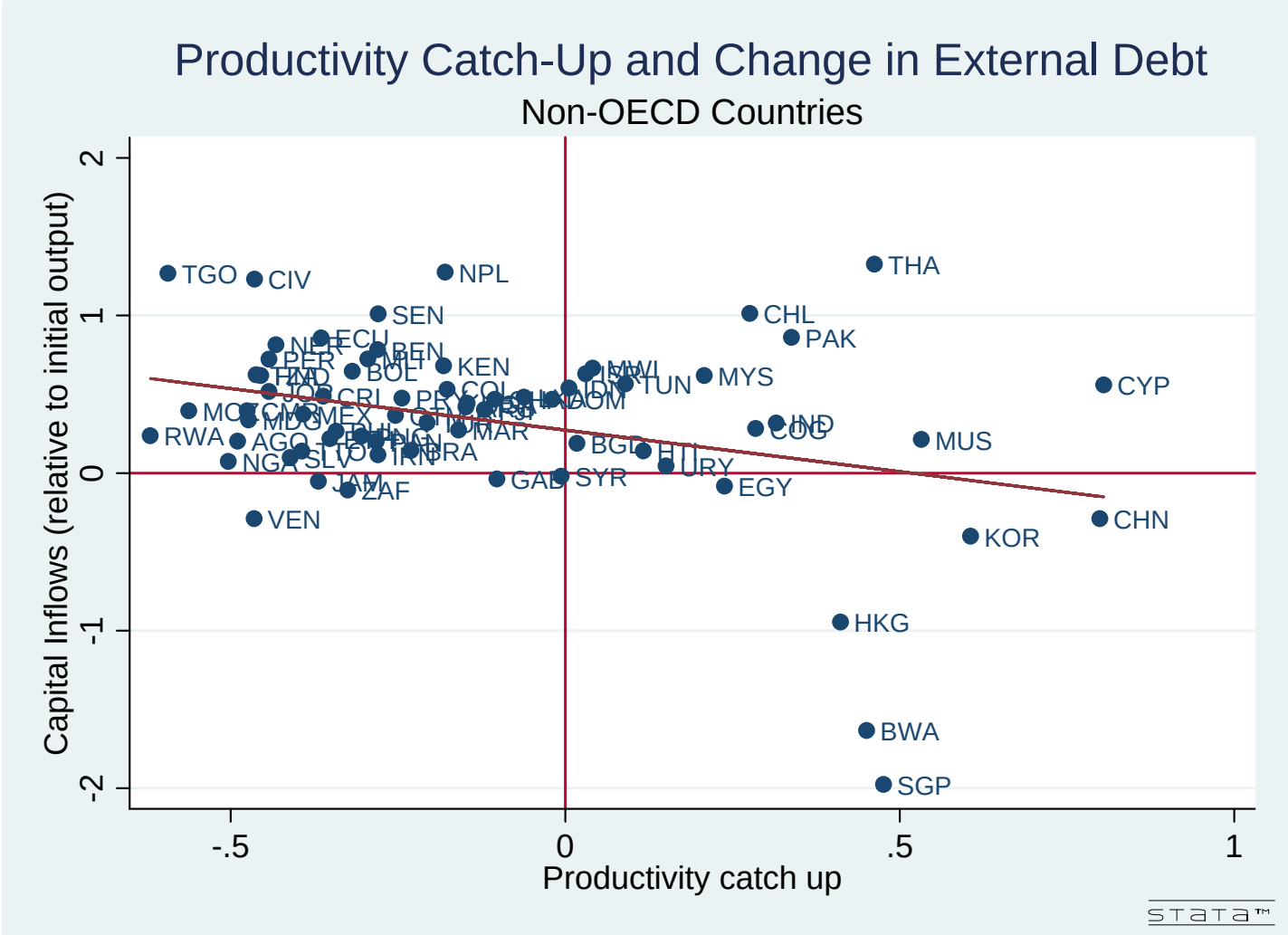
Data

- GJ sample: 67 developing countries (non-OECD) for 1980–2000, sources: LM, PWT
- We use same data and also extend it to more developing countries and years, sources: LM, IMF, WB.
  - ⋆ Total Net Flows: CA/GDP as the current account balance normalized by GDP, averaged over time.
  - ⋆ Total Net Flows: Change in net total assets and liabilities between first and last year, normalized by first year GDP.
  - ⋆ Net Equity Flows and Net Debt Flows: Similar definition to total
  - ⋆ Aid Flows: Net overseas assistance from the Development Assistance Committee online database, Roodman (2005).

Replicating GJ (Flows: Current Account/GDP)



Replicating GJ (Flows: Change in NEP/Initial GDP)



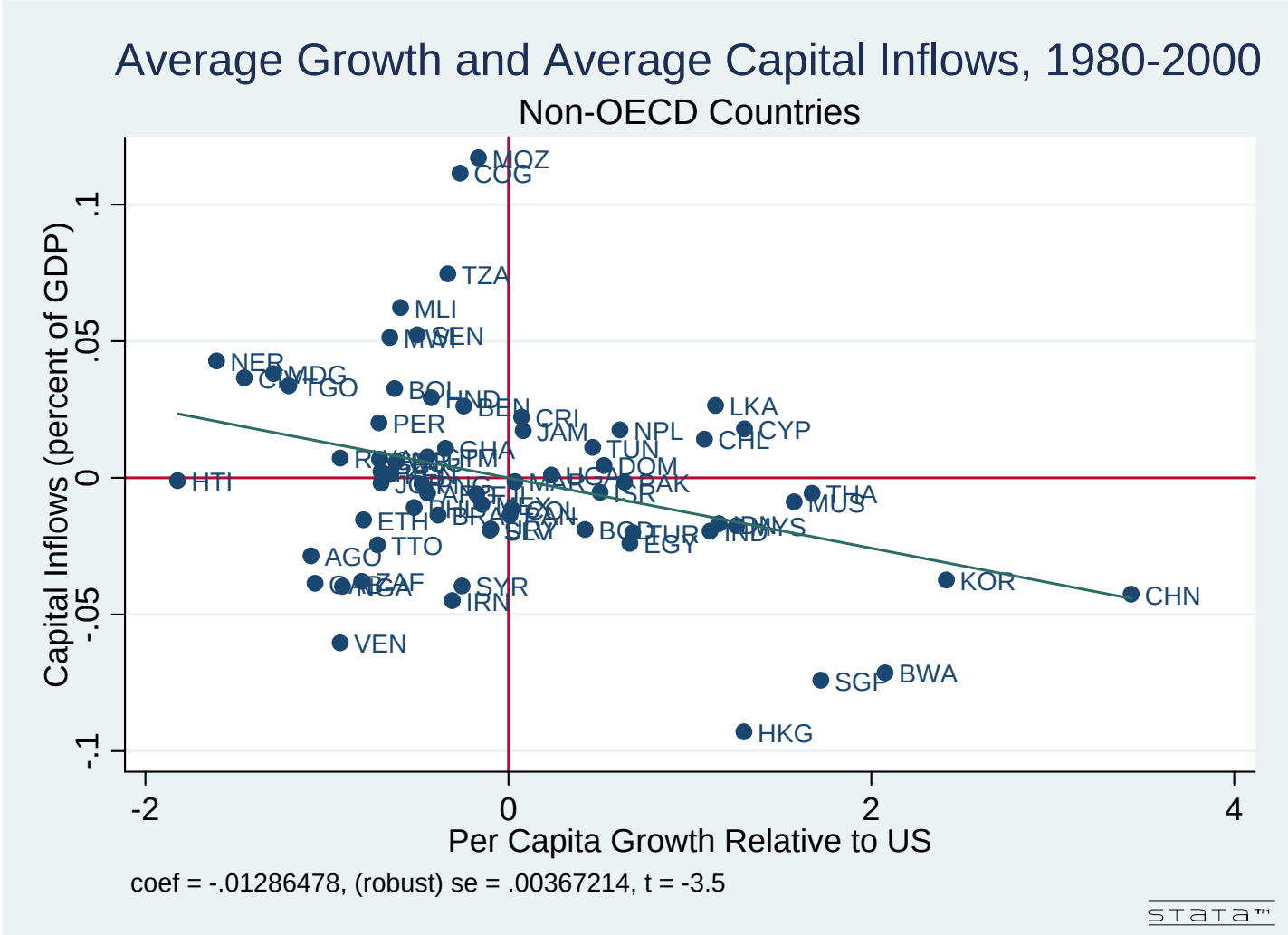
Aid Flows and Current Account: 1980–2000

Flows Sample	CA/GDP Non-OECD	(CA/GDP)-Aid Non-OECD	CA/GDP Developing	(CA/GDP)-Aid Developing
Productivity Catch-Up Relative to US	-0.0347*** (0.0148)	0.0275 (0.0165)	-0.0247* (0.0142)	0.0353** (0.0169)
GDP Growth (pcap) Relative to US	-0.0129*** (0.037)	0.008 (0.005)	-0.0097*** (0.0034)	0.0103* (0.0054)
$R^2(growth)$ Countries	0.12 67	0.03 67	0.08 65	0.05 65

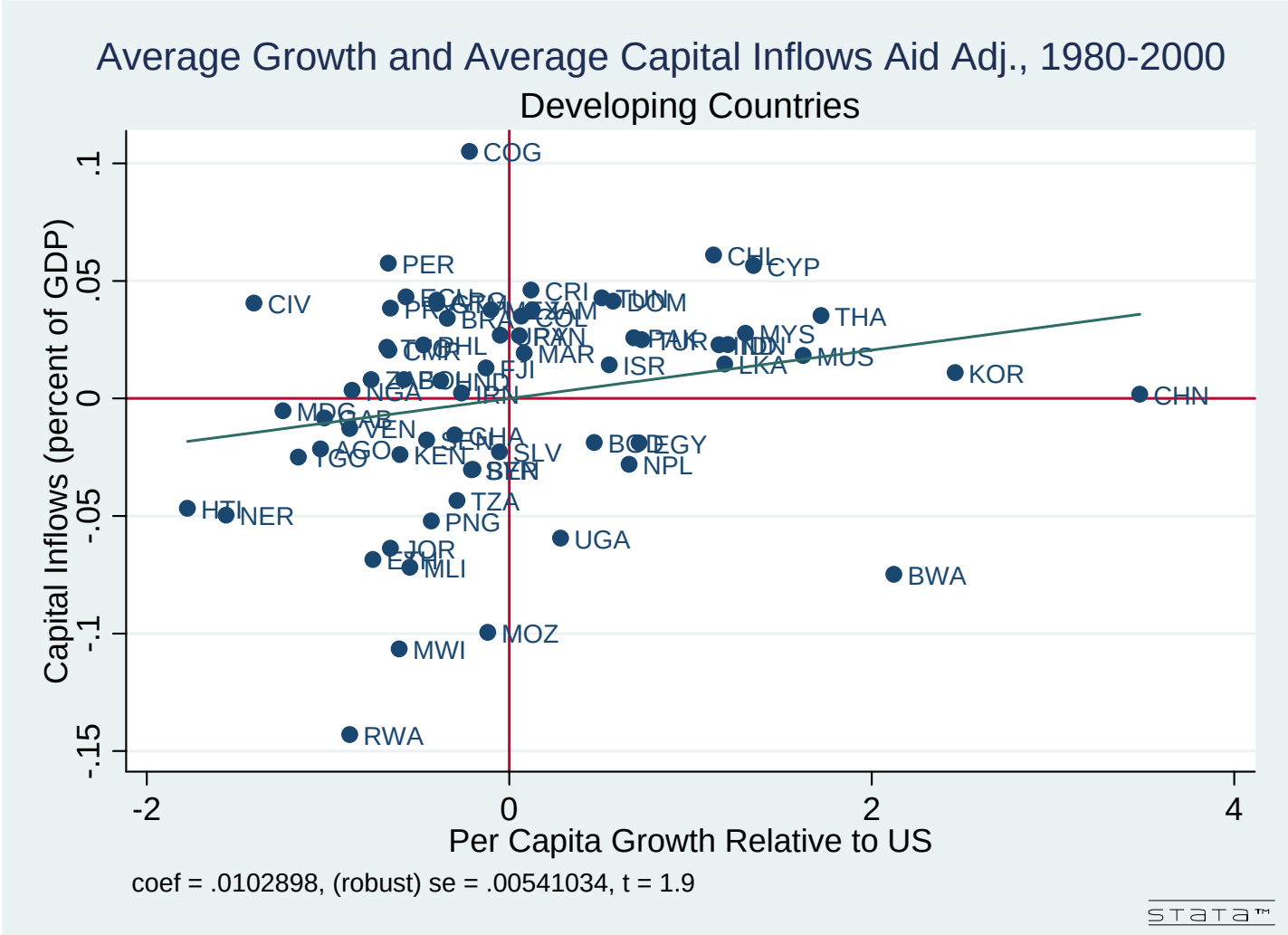
It is Aid, not Debt

Flows Sample	Equity Flows Non-OECD	Aid Flows Non-OECD	Debt Flows Non-OECD
Productivity Catch-Up Relative to US	0.2949*** (0.1334)	-0.4580*** (0.1385)	0.2399 (0.2697)
Per-Capita GDP Growth Relative to US	0.1286*** (0.0417)	-0.1578*** (0.0553)	0.0493 (0.0847)
$R^2(growth)$ Countries	0.17 67	0.07 67	0.008 67

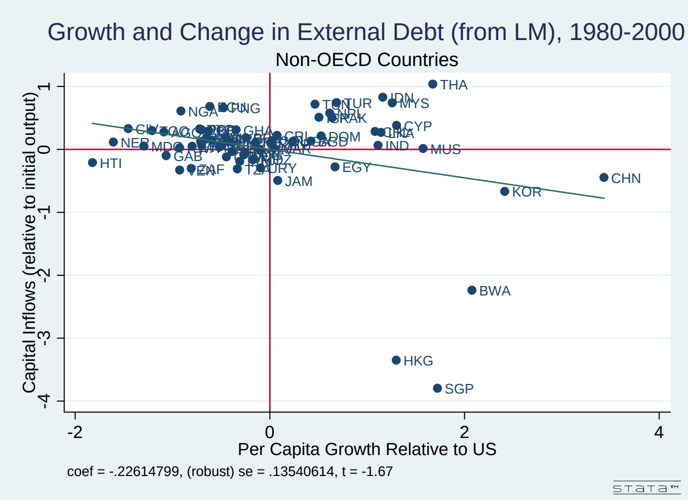
Non-OECD


Average Growth and Average Capital Inflows, 1980-2000
Non-OECD Countries
Capital Inflows (percent of GDP)
.1
.05
0
-.05
-.1
-2
0
2
4
Per Capita Growth Relative to US
MOZ
COG
TZA
MLI
SEN
NER
MDG
TGO
BOL
HND
BEN
CRI
LKA
PER
JAM
NPL
CYP
CHL
GHA
TUN
DOM
HTI
MAR
BAK
ISR
THA
MUS
ETH
BGD
TUR
EGY
IND
TTO
AGO
SYR
IRN
KOR
CHN
VEN
SGP
BWA
HKG
coef = -.01286478, (robust) se = .00367214, t = -3.5
stata™

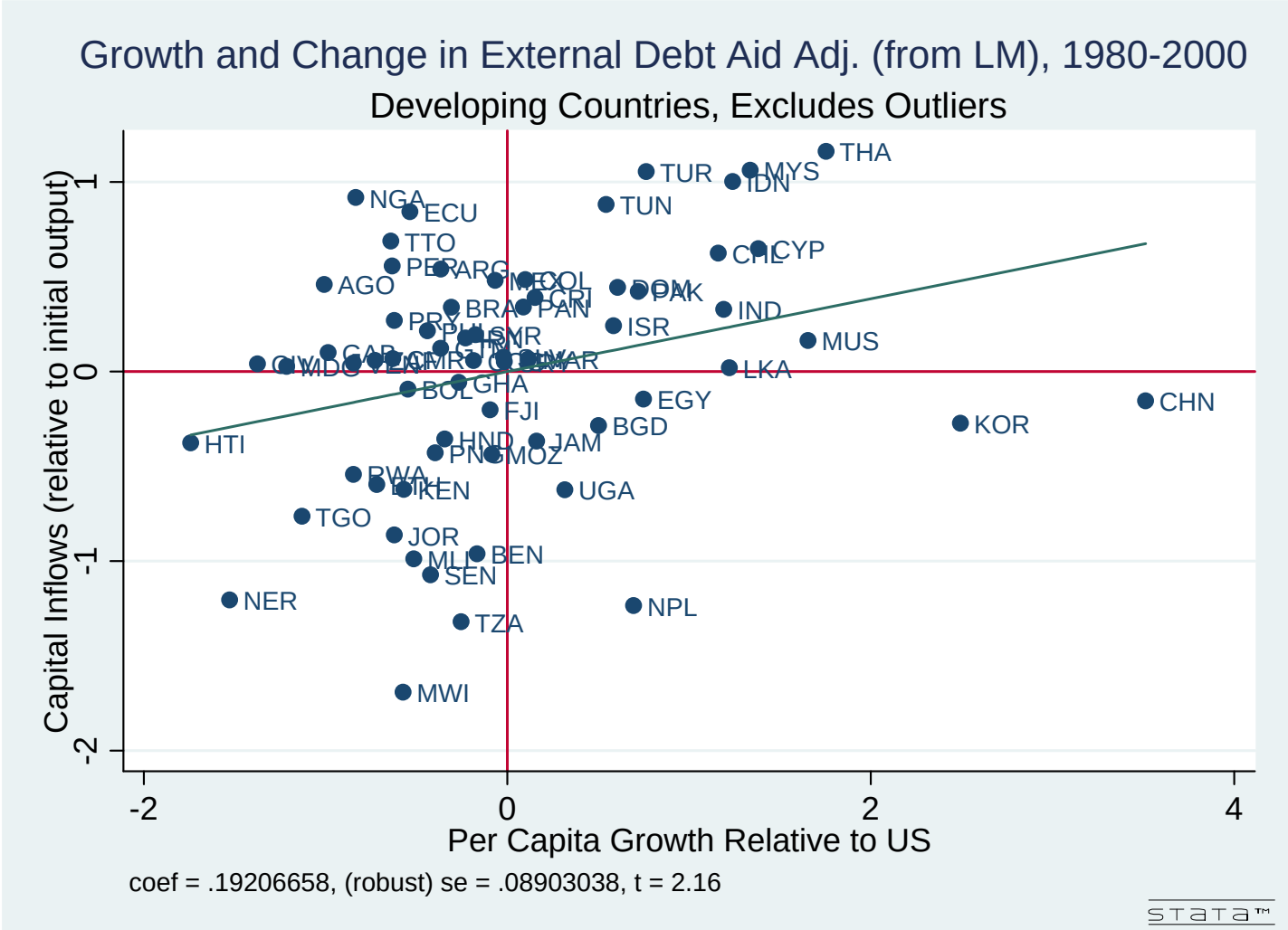
Developing, No Aid



Non-OECD


Growth and Change in External Debt (from LM), 1980-2000
Non-OECD Countries
Capital Inflows (relative to initial output)
Per Capita Growth Relative to US
-4
-3
-2
-1
0
1
-2
0
2
4
THA
MYS
CYP
MUS
IND
EGY
JAM
CHN
KOR
BWA
HKG
SGP
HTI
NER
NGA
GAB
GHA
CRI
DOM
ZAF
MDG
coef = -.22614799, (robust) se = .13540614, t = -1.67

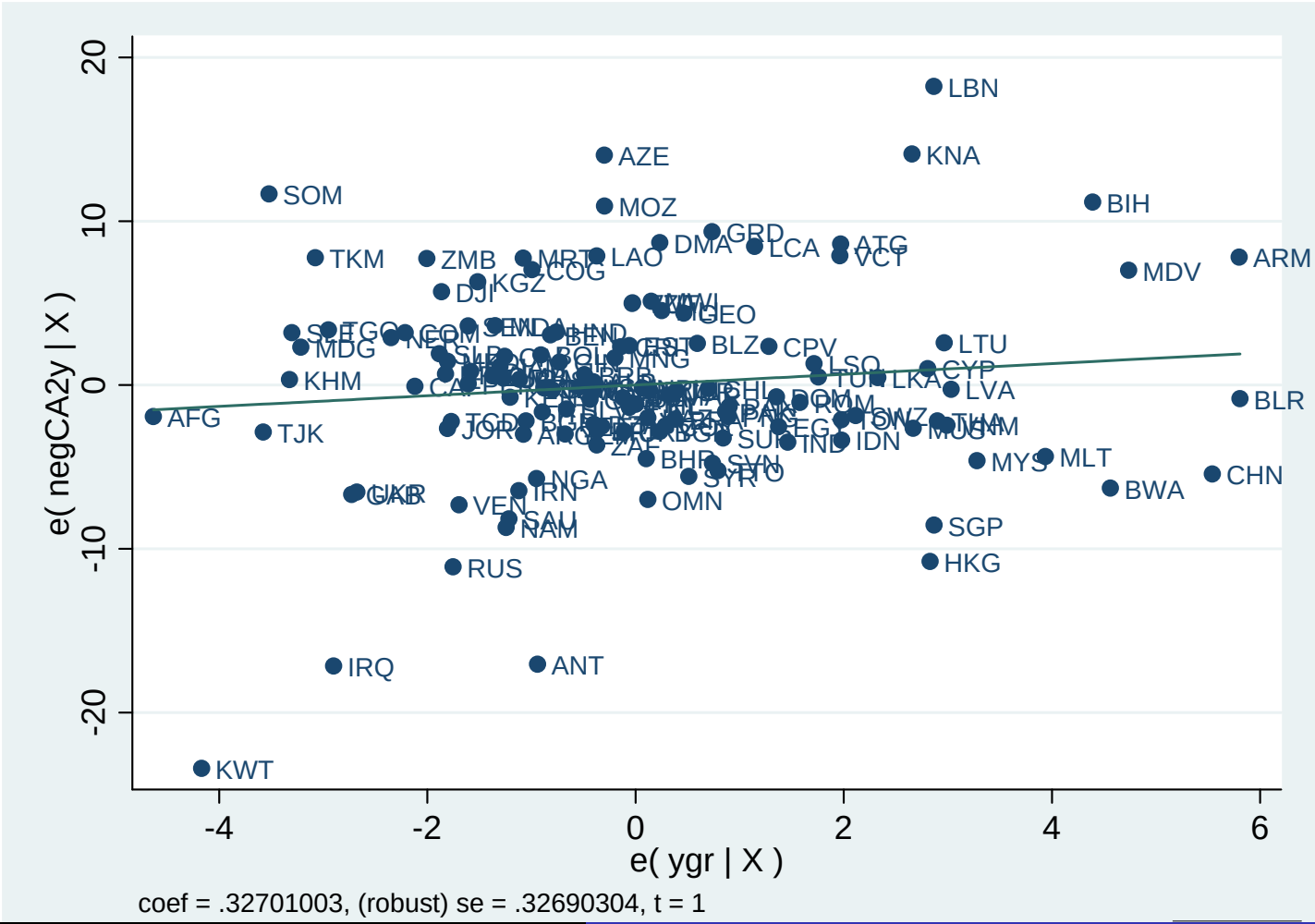
Developing, No Aid



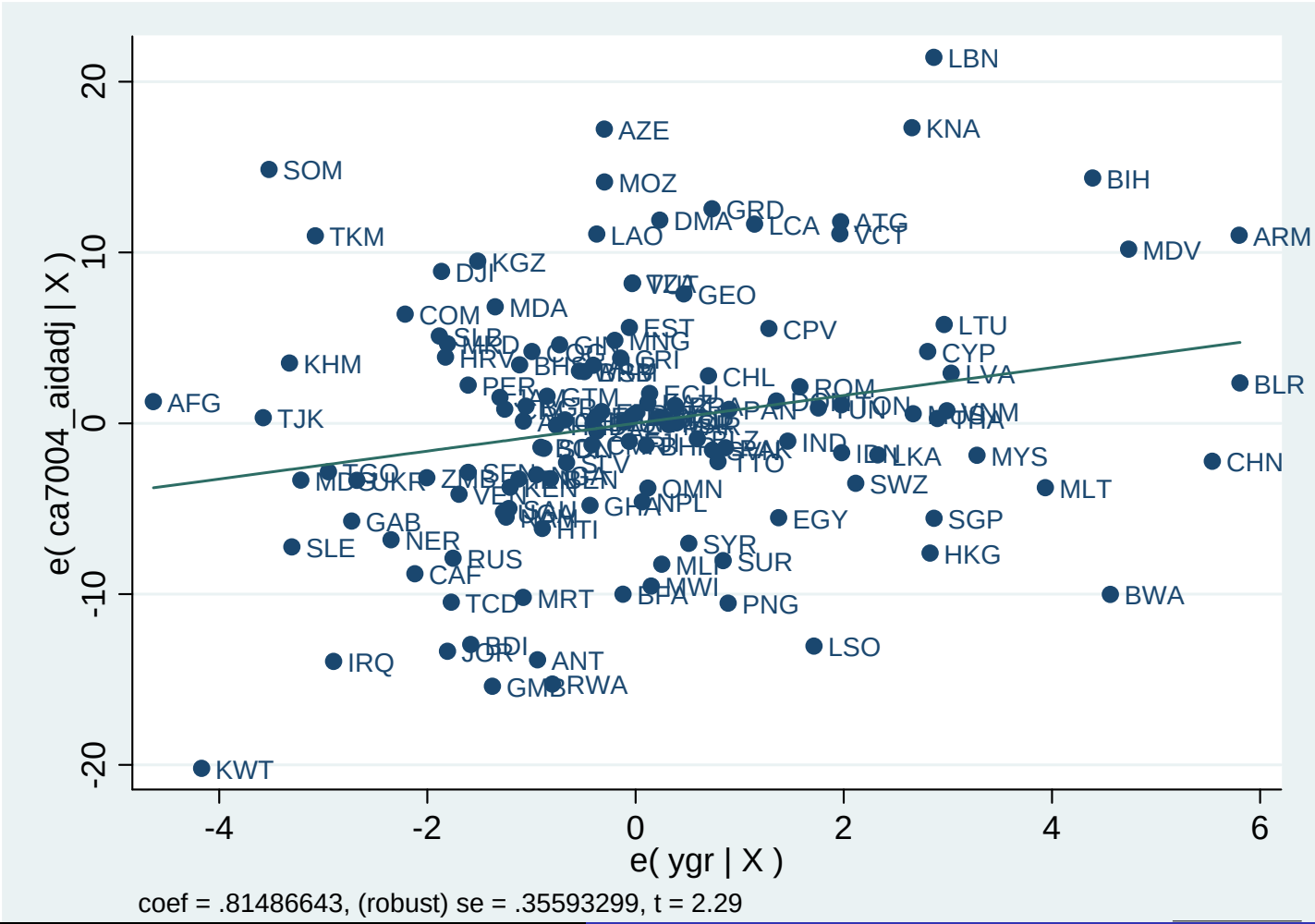
Why not use a bigger set of developing countries?

We test the correlation between capital flows and productivity using 115 developing countries instead of a sample of 67 (by using data not only from PWT but also from WB).

CA/GDP versus GDP p.c. Growth: Developing Countries, 1970–2005

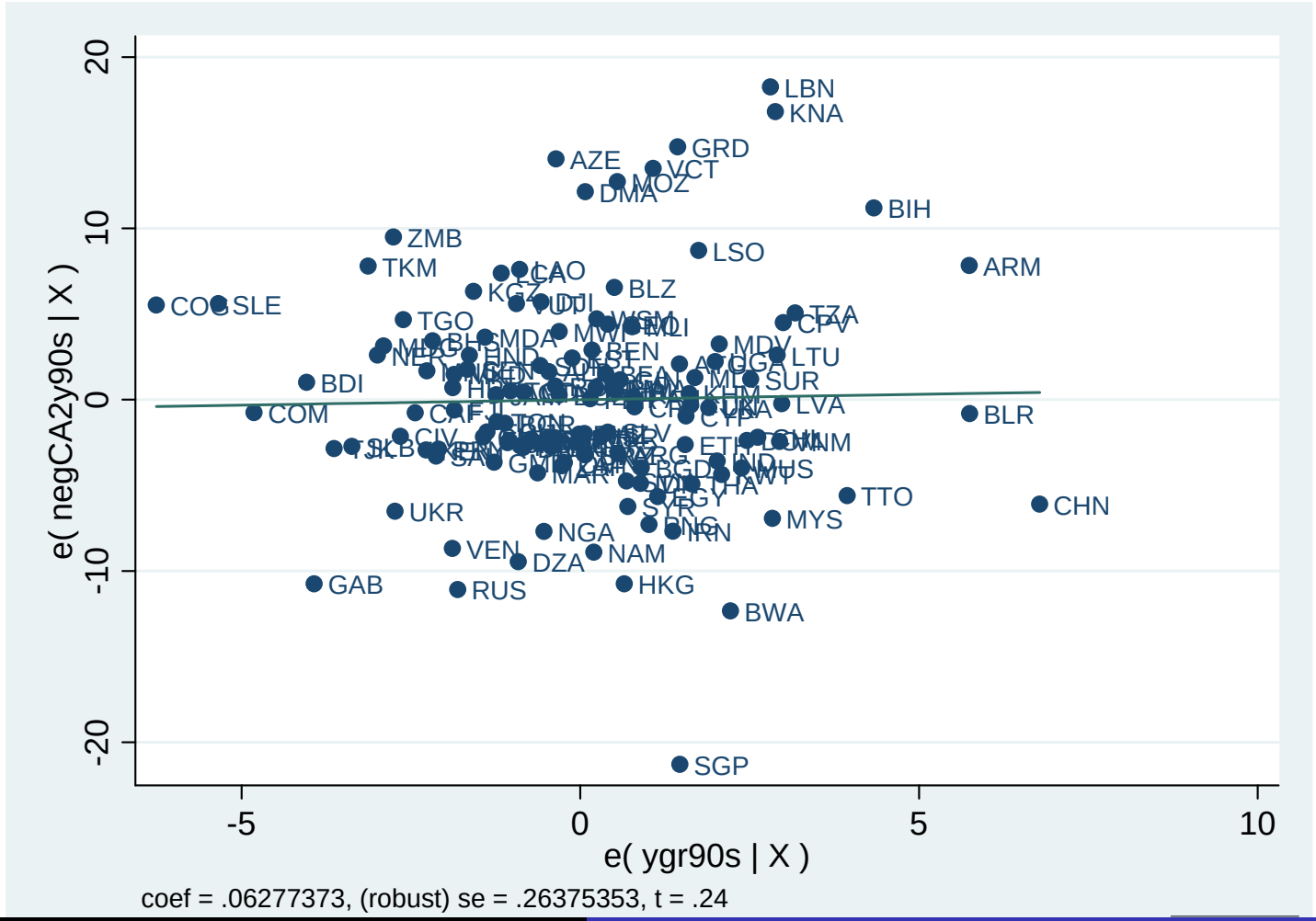


CA/GDP versus GDP p.c. Growth: Developing Countries, 1970–2005: No Aid



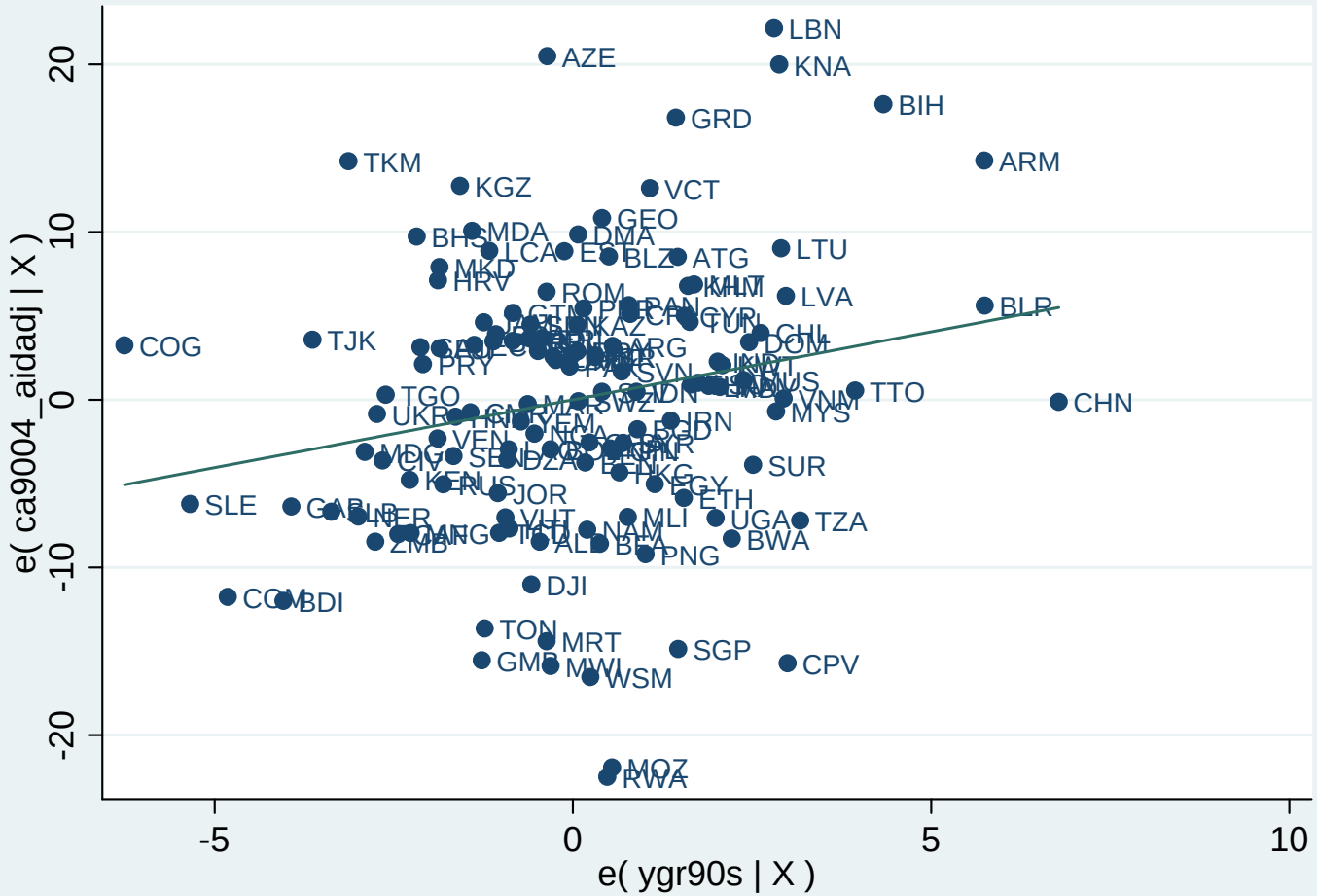
coef = .81486643, (robust) se = .35593299, t = 2.29

CA/GDP versus GDP p.c. Growth: Developing Countries, 1990–2005



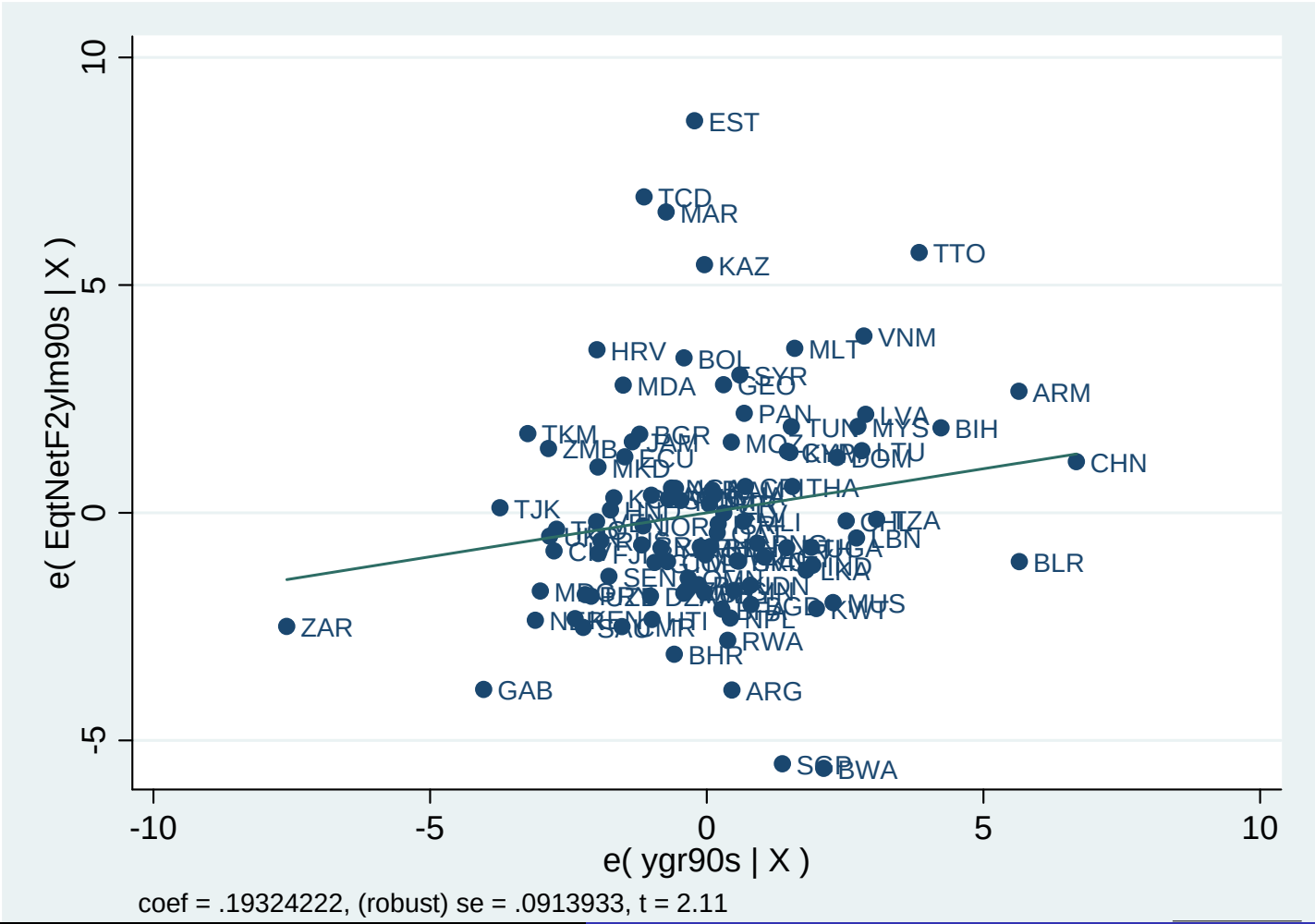
coef = .06277373, (robust) se = .26375353, t = .24

CA/GDP versus GDP p.c. Growth: Developing Countries, 1990–2005: No Aid



coef = .81035194, (robust) se = .3239781, t = 2.5

CA/GDP versus GDP p.c. Growth: Developing Countries, 1990–2005: Equity Flows



coef = .19324222, (robust) se = .0913933, t = 2.11

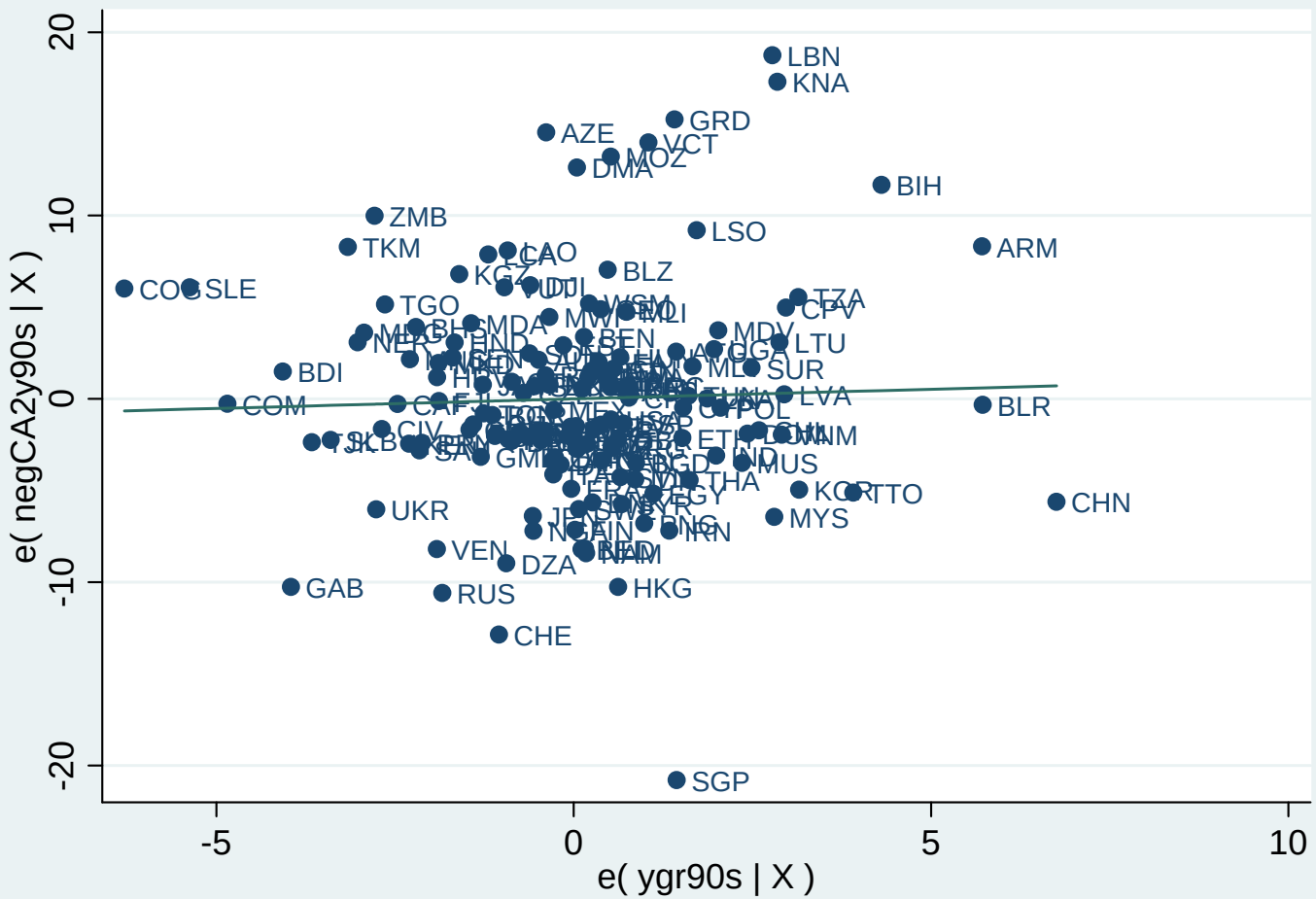
What about a sample of developed and developing countries together?

- The basic exercise is about testing the predictions of the neoclassical model as in Lucas (1990)
- So it is important to test whether or not capital flows to productive places within the whole world not just within the developing countries.

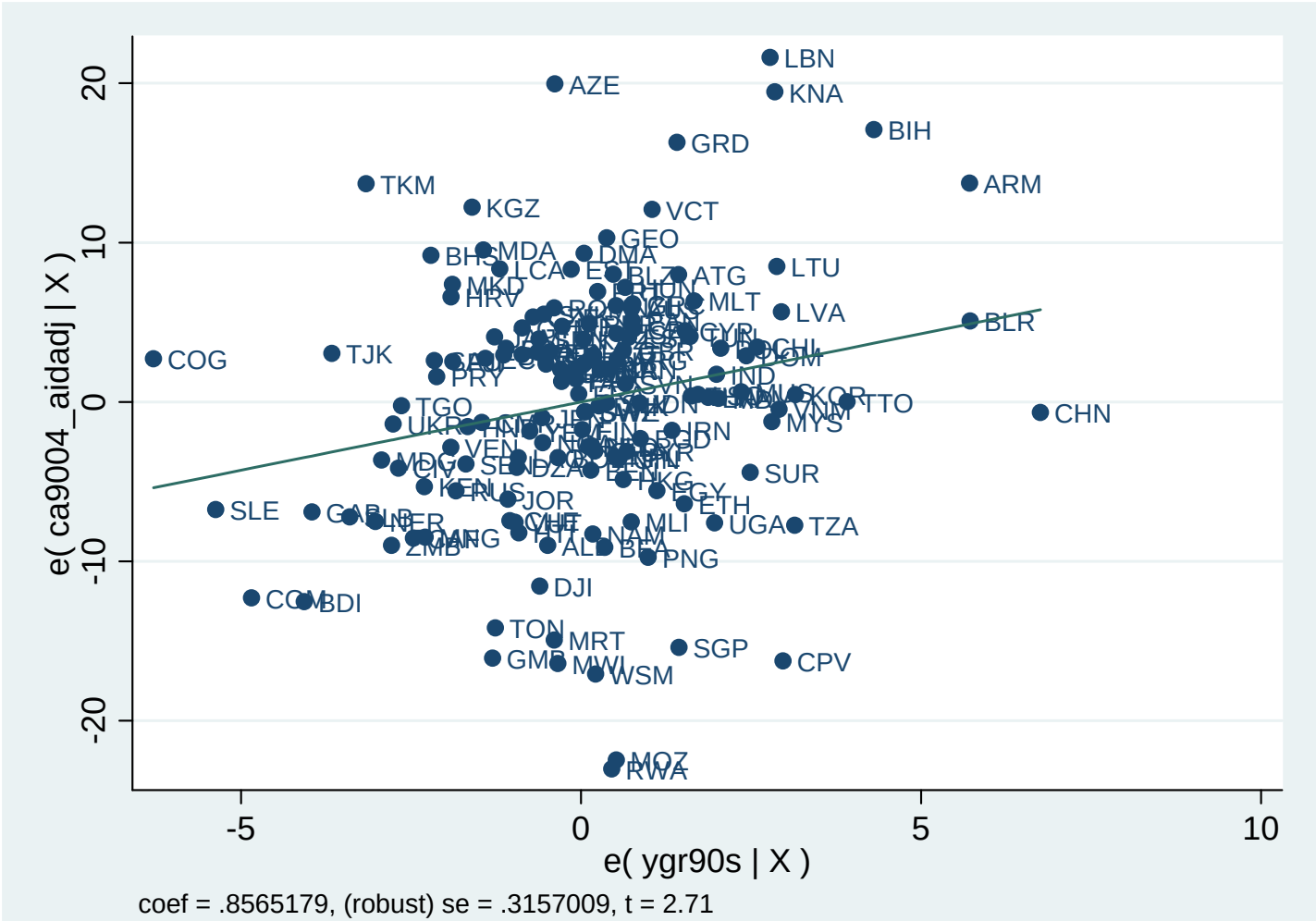
What about a sample of developed and developing countries together?

- The basic exercise is about testing the predictions of the neoclassical model as in Lucas (1990)
- So it is important to test whether or not capital flows to productive places within the whole world not just within the developing countries.

CA/GDP versus GDP p.c. Growth: All World, 1990–2005



CA/GDP versus GDP p.c. Growth: All World, 1990–2005: No Aid



coef = .8565179, (robust) se = .3157009, t = 2.71

How to reconcile these findings with Lucas Paradox?

- If capital flows seem to be going to non-productive (=poor) places due to aid flows then there should not be Lucas Paradox in the same sample, when we regress on **level of GDP** instead of growth.
- Once we adjust with aid flows capital will go to productive places (=high growth) and Lucas paradox reappear if productive places are also the rich countries.
  - ⋆ Kalemli-Ozcan et al. (2009) shows that in an integrated market such as the U.S. capital flows to productive states which are also happen to be the rich states.
  - ⋆ Forbes (2009) shows that foreigners invest in the U.S. since U.S. has been relatively more productive on average.

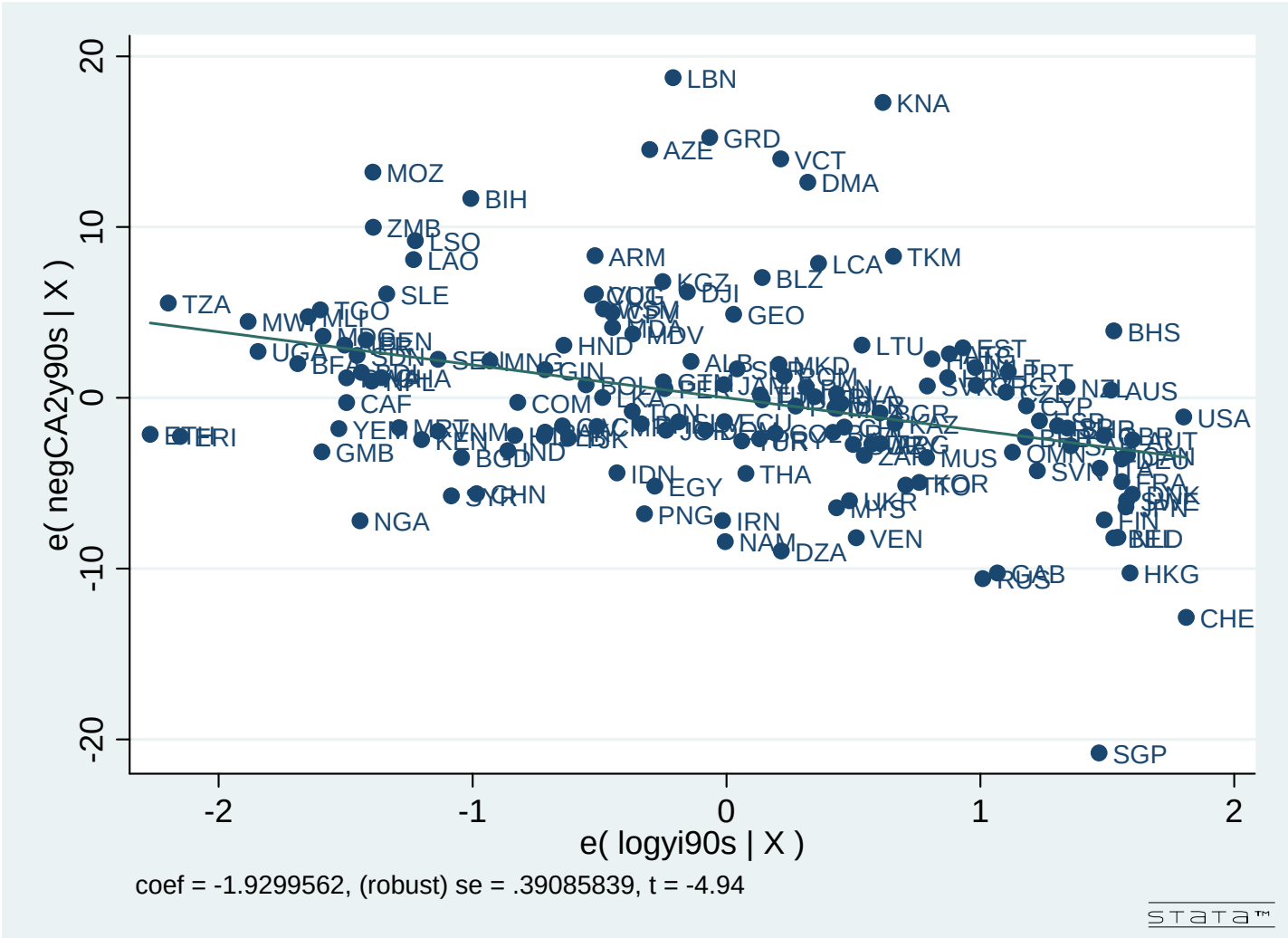
How to reconcile these findings with Lucas Paradox?

- If capital flows seem to be going to non-productive (=poor) places due to aid flows then there should not be Lucas Paradox in the same sample, when we regress on **level of GDP** instead of growth.
- Once we adjust with aid flows capital will go to productive places (=high growth) and Lucas paradox reappear if productive places are also the rich countries.
  - ⋆ Kalemli-Ozcan et al. (2009) shows that in an integrated market such as the U.S. capital flows to productive states which are also happen to be the rich states.
  - ⋆ Forbes (2009) shows that foreigners invest in the U.S. since U.S. has been relatively more productive on average.

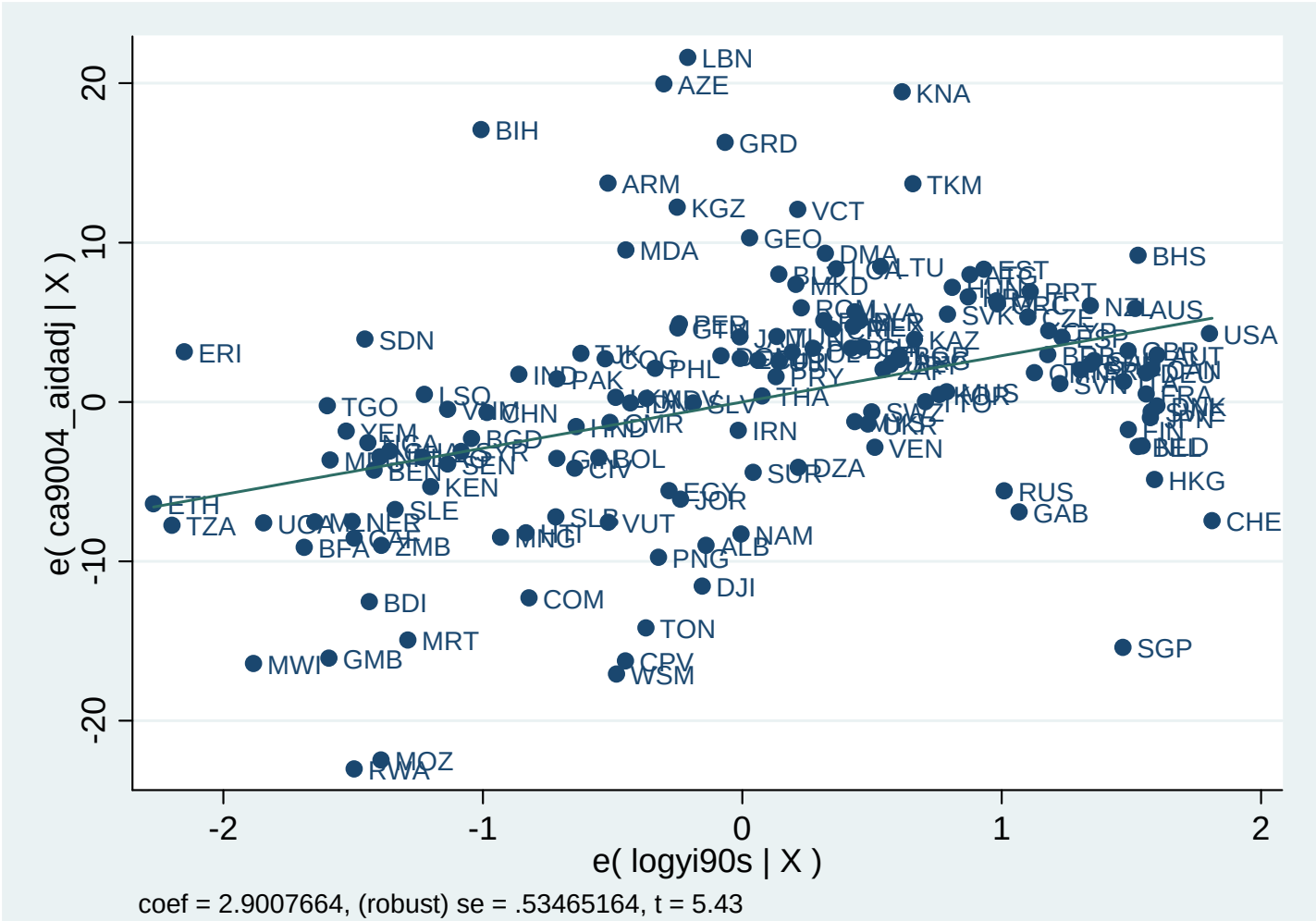
How to reconcile these findings with Lucas Paradox?

- If capital flows seem to be going to non-productive (=poor) places due to aid flows then there should not be Lucas Paradox in the same sample, when we regress on **level of GDP** instead of growth.
- Once we adjust with aid flows capital will go to productive places (=high growth) and Lucas paradox reappear if productive places are also the rich countries.
  - ⋆ Kalemli-Ozcan et al. (2009) shows that in an integrated market such as the U.S. capital flows to productive states which are also happen to be the rich states.
  - ⋆ Forbes (2009) shows that foreigners invest in the U.S. since U.S. has been relatively more productive on average.

CA/GDP versus Log GDP p.c.: All World, 1990–2005



CA/GDP versus Log GDP p.c.: All World, 1990–2005: No Aid



coef = 2.9007664, (robust) se = .53465164, t = 5.43

Is there a role of global imbalances?

- The flows-productivity puzzle seems to be driven not only by high aid countries but also countries that are productive and high savers (exporting capital)
- Thus, global imbalances might be the reason why some productive places seem to be receiving less flows relative to non-productive places.
- We plot the partial correlation plots for capital flows (negative of current account) and growth after controlling S/GDP.

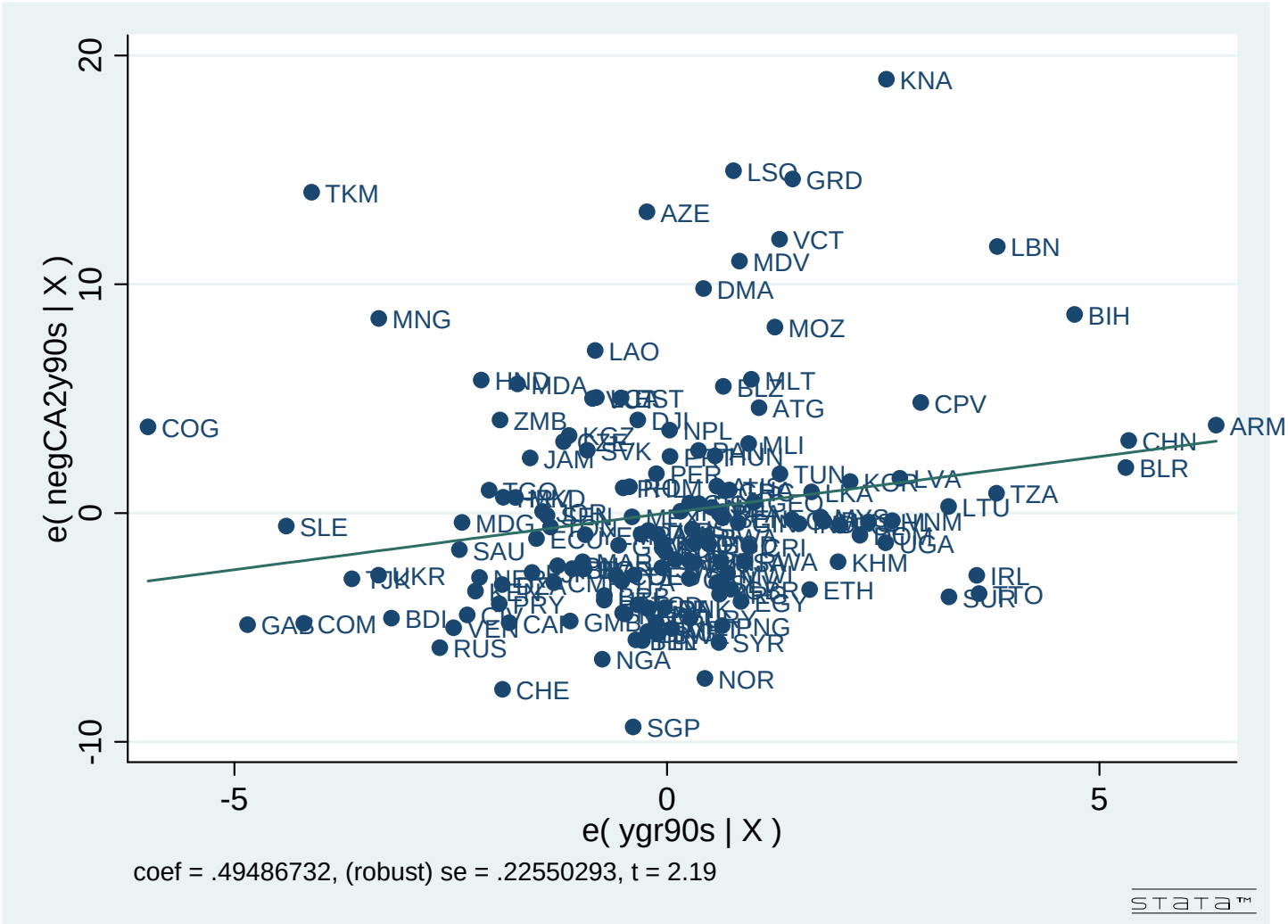
Is there a role of global imbalances?

- The flows-productivity puzzle seems to be driven not only by high aid countries but also countries that are productive and high savers (exporting capital)
- Thus, global imbalances might be the reason why some productive places seem to be receiving less flows relative to non-productive places.
- We plot the partial correlation plots for capital flows (negative of current account) and growth after controlling S/GDP.

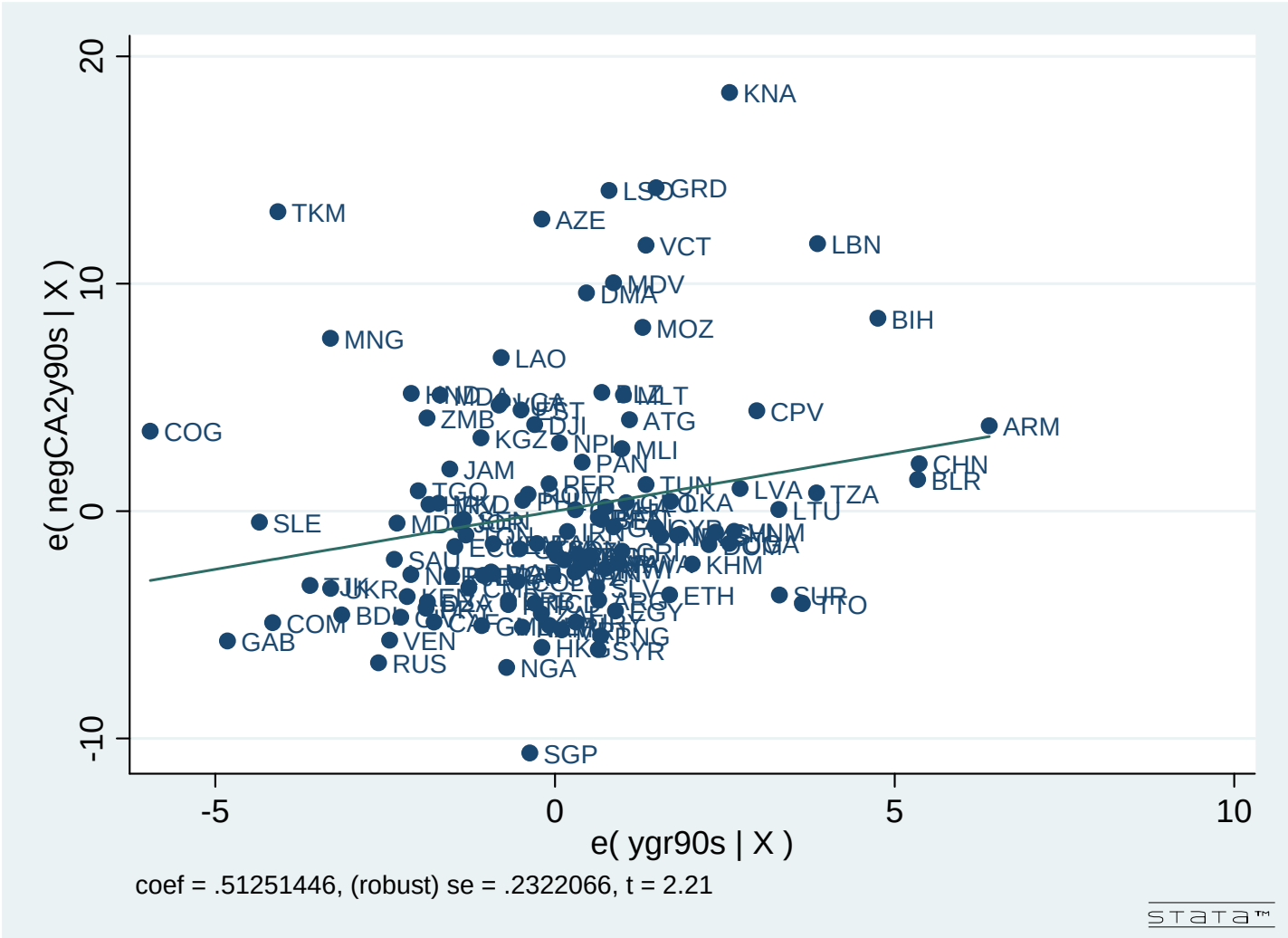
Is there a role of global imbalances?

- The flows-productivity puzzle seems to be driven not only by high aid countries but also countries that are productive and high savers (exporting capital)
- Thus, global imbalances might be the reason why some productive places seem to be receiving less flows relative to non-productive places.
- We plot the partial correlation plots for capital flows (negative of current account) and growth after controlling S/GDP.

All World, Conditional on Savings: 1990–2005



Non-OECD, Conditional on Savings: 1990–2005



Conclusion

- The predictions of the neoclassical model are born out by the data:
  - ⋆ Aid adjusted flows go to productive countries
  - ⋆ Private flows (no government) also go to productive countries
- Is this surprising? No, the benchmark neoclassical model is about private investors, not about government behavior.
- In the 1990s, to resurrect the neoclassical model, it is also enough to account for global imbalances (i.e., high saver countries who are also productive and export debt capital).
- Research must focus on the causes of global imbalances

Conclusion

- The predictions of the neoclassical model are born out by the data:
  - ⋆ Aid adjusted flows go to productive countries
  - ⋆ Private flows (no government) also go to productive countries
- Is this surprising? No, the benchmark neoclassical model is about private investors, not about government behavior.
- In the 1990s, to resurrect the neoclassical model, it is also enough to account for global imbalances (i.e., high saver countries who are also productive and export debt capital).
- Research must focus on the causes of global imbalances

Conclusion

- The predictions of the neoclassical model are born out by the data:
  - ⋆ Aid adjusted flows go to productive countries
  - ⋆ Private flows (no government) also go to productive countries
- Is this surprising? No, the benchmark neoclassical model is about private investors, not about government behavior.
- In the 1990s, to resurrect the neoclassical model, it is also enough to account for global imbalances (i.e., high saver countries who are also productive and export debt capital).
- Research must focus on the causes of global imbalances

Conclusion

- The predictions of the neoclassical model are born out by the data:
  - ⋆ Aid adjusted flows go to productive countries
  - ⋆ Private flows (no government) also go to productive countries
- Is this surprising? No, the benchmark neoclassical model is about private investors, not about government behavior.
- In the 1990s, to resurrect the neoclassical model, it is also enough to account for global imbalances (i.e., high saver countries who are also productive and export debt capital).
- Research must focus on the causes of global imbalances

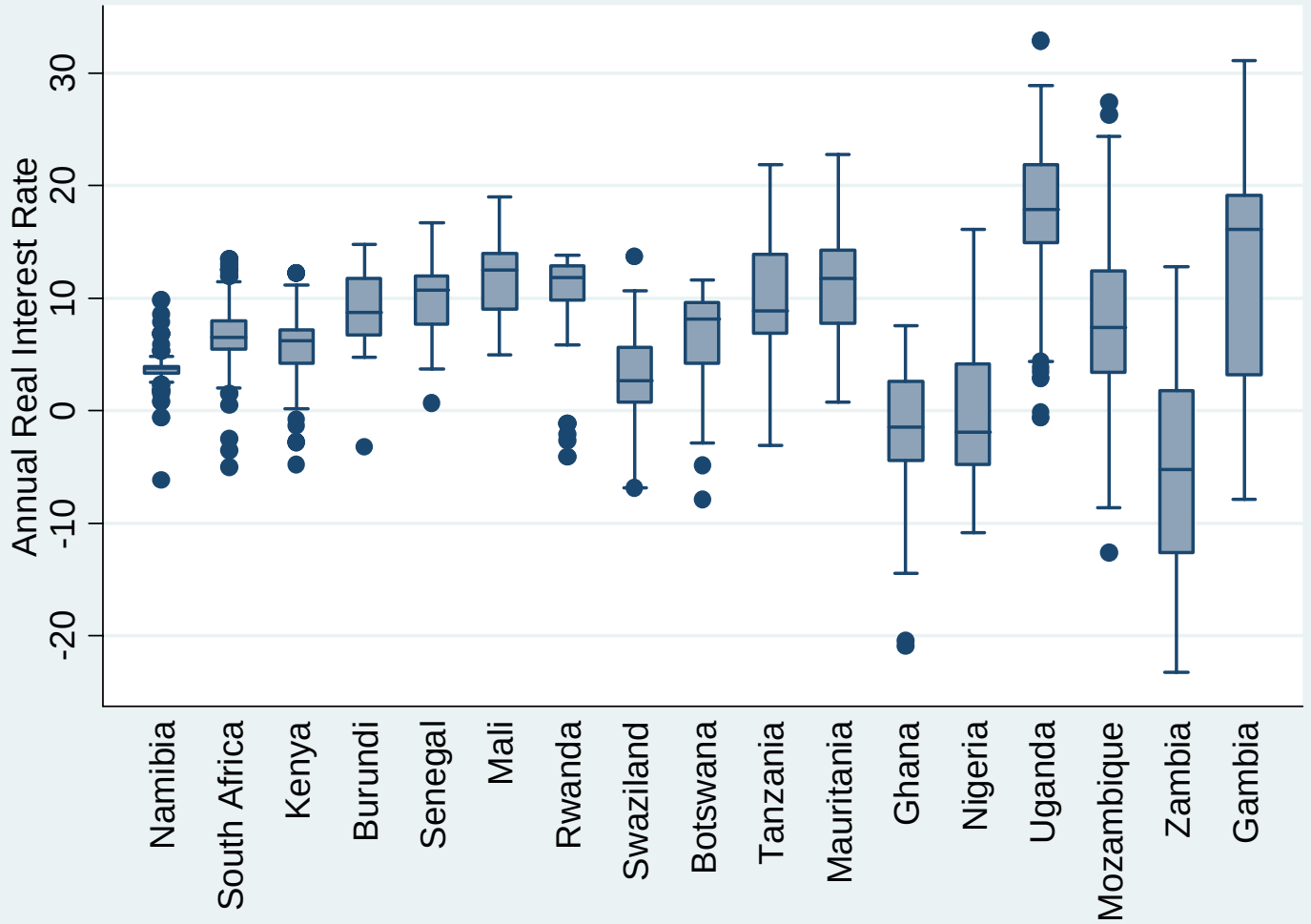
Conclusion

- The predictions of the neoclassical model are born out by the data:
  - ⋆ Aid adjusted flows go to productive countries
  - ⋆ Private flows (no government) also go to productive countries
- Is this surprising? No, the benchmark neoclassical model is about private investors, not about government behavior.
- In the 1990s, to resurrect the neoclassical model, it is also enough to account for global imbalances (i.e., high saver countries who are also productive and export debt capital).
- Research must focus on the causes of global imbalances

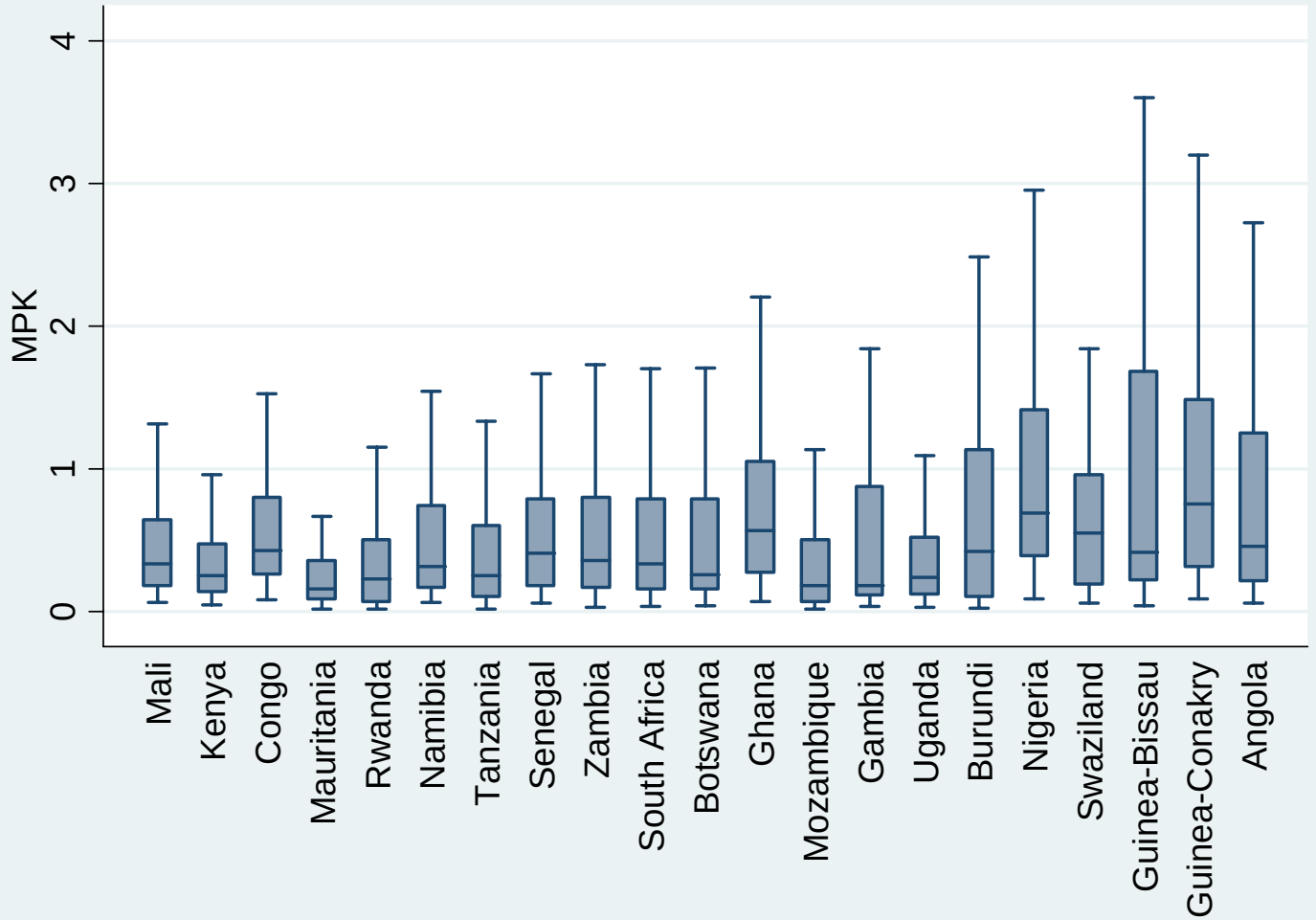
Conclusion

- The predictions of the neoclassical model are born out by the data:
  - ⋆ Aid adjusted flows go to productive countries
  - ⋆ Private flows (no government) also go to productive countries
- Is this surprising? No, the benchmark neoclassical model is about private investors, not about government behavior.
- In the 1990s, to resurrect the neoclassical model, it is also enough to account for global imbalances (i.e., high saver countries who are also productive and export debt capital).
- Research must focus on the causes of global imbalances

Distribution of Real Interest Rates from Kalemli-Ozcan and Sorensen (2009)



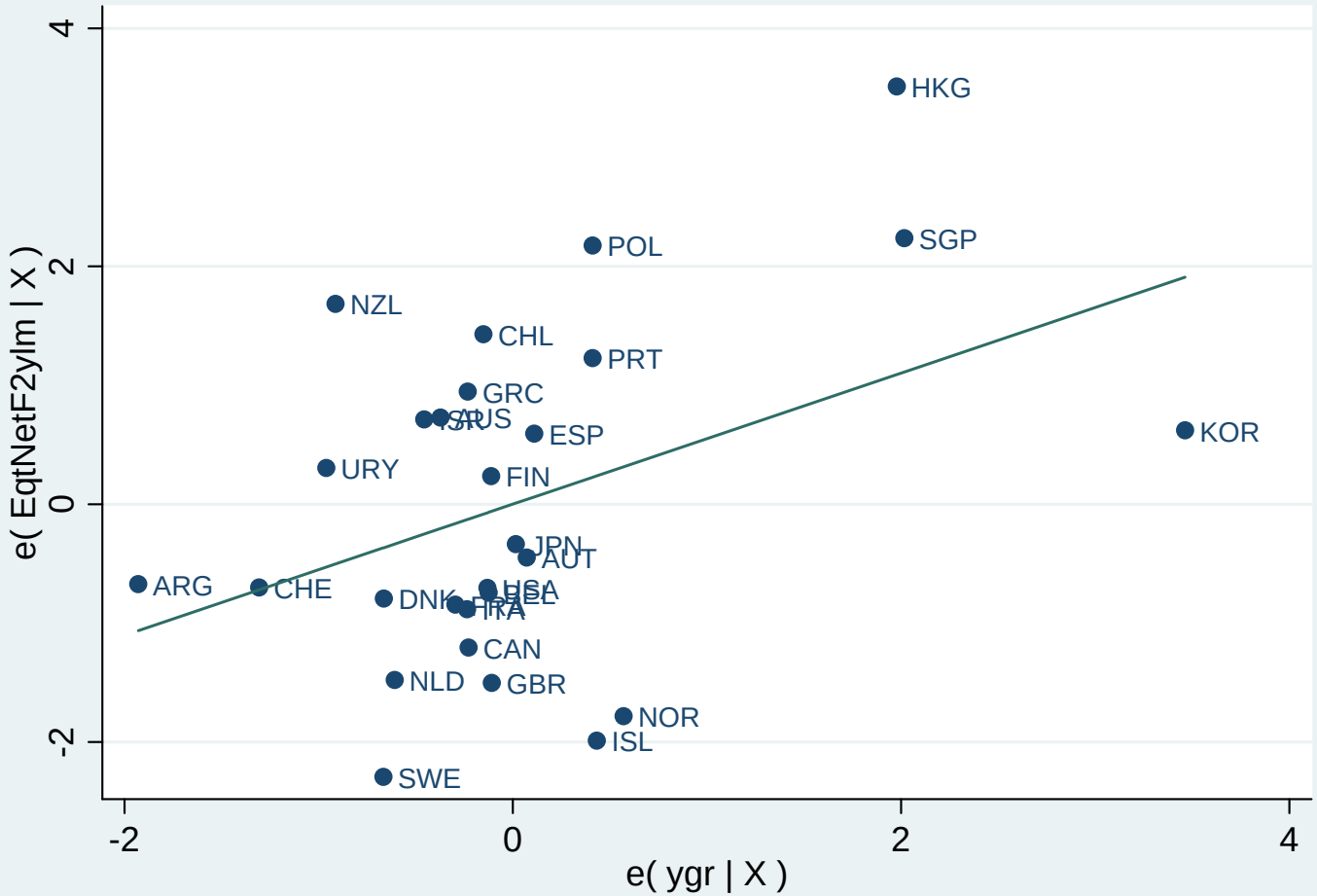
Distribution of MPKs from Kalemli-Ozcan and Sorensen (2009)



PWT Data

- There are issues with the PWT data, where GDP and productivity numbers are based upon in most of the recent studies.
- Deaton and Heston (2008) suggest to use only the good quality data; A and B rated countries
- We suggest to use private flows instead of CA.

All World, PWT A and B Countries, Equity Flows: 1970–2005



coef = .5511558, (robust) se = .26641845, t = 2.07