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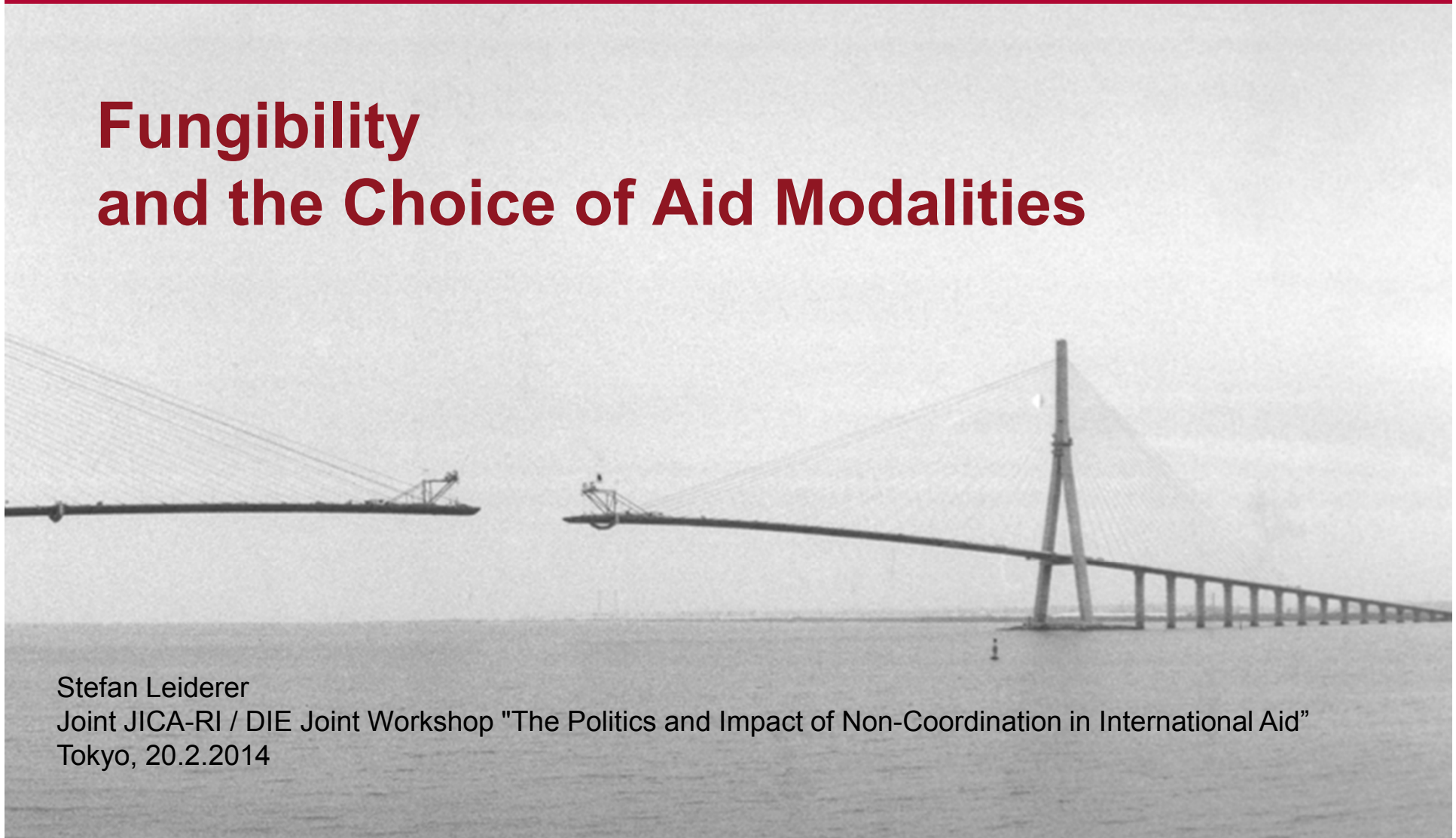
German Development  
Institute

# Fungibility and the Choice of Aid Modalities

Stefan Leiderer

Joint JICA-RI / DIE Joint Workshop "The Politics and Impact of Non-Coordination in International Aid"

Tokyo, 20.2.2014





- ✓ General consensus that aid is not as effective as could and should be.
- ✓ At least partly due to the way **how** aid is provided

## Main concerns in the policy debate on aid modalities

- ✓ **Transaction costs:** administrative cost and inefficiencies due to fragmentation and misalignment
- ✓ **Fiduciary risk:** risk that aid resources are not (or not efficiently) used for the purposes intended by the donor
- ✓ **Fungibility:** aid resources can substitute domestic resources



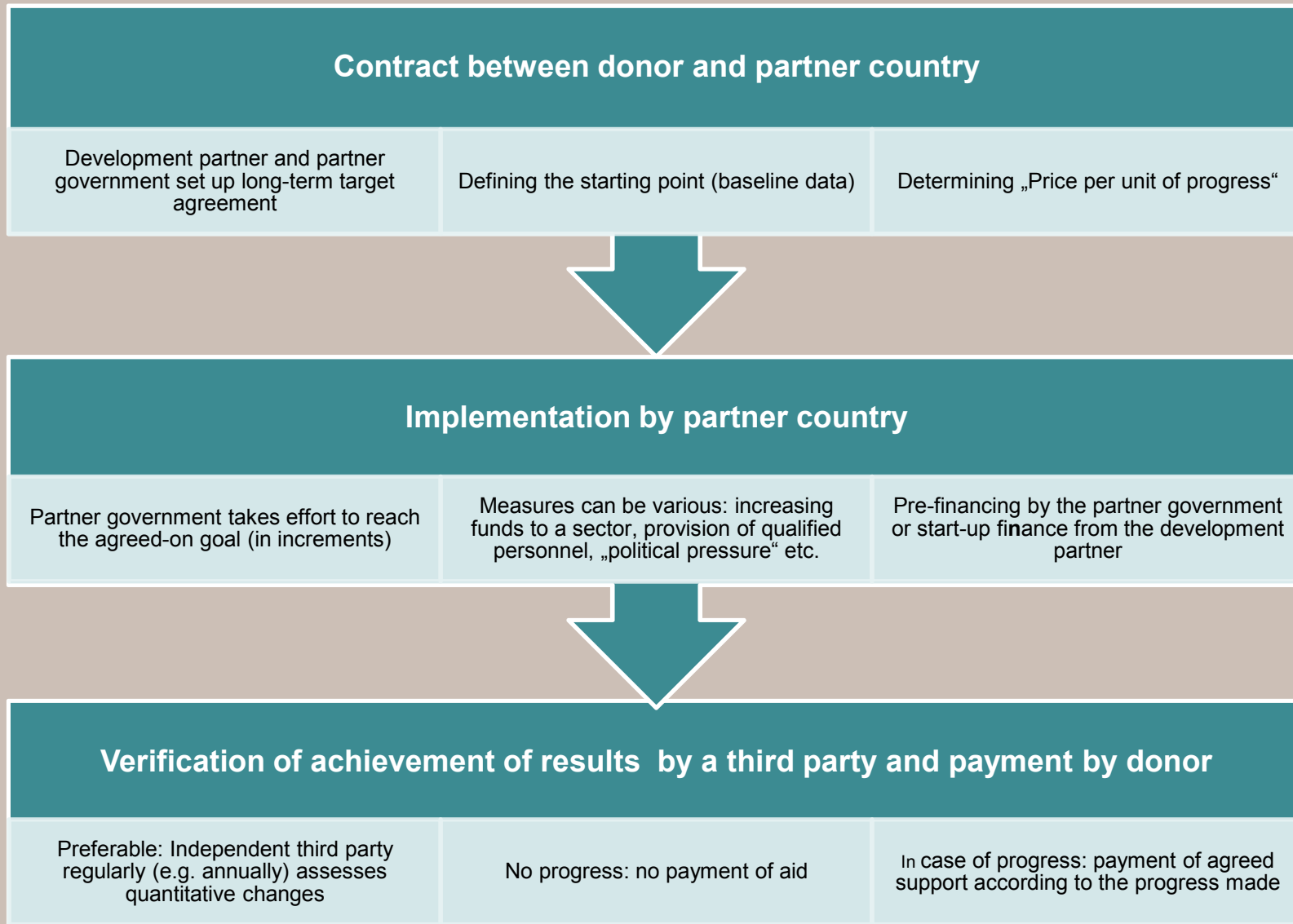
- ✓ Main debate so far: **project aid vs. budget support**
- ✓ The newcomer: „Results-based Aid“ or „Aid on Delivery“
  - ✓ Aid amount and disbursement conditional on achieved outcomes
  - ✓ Idea: avoid fiduciary risks by disbursing ex-post
  - ✓ Create incentives for recipients to spend money on the „right“ things

**CGD: “Cash on Delivery”**

**WB: “Programme for Results”**

**EC: BS “Performance Tranches”**

# Results-based Approaches





## Projects

- ✓ Provide donors with full control over use of funds, but involve high transaction costs and undermine recipients' own administrative and political capacities

## Budget Support

- ✓ Reduces transaction costs and strengthens local political and administrative processes, but involves high fiduciary risks due to fungibility

## Aid on Delivery / Results-based Aid

- ✓ The best of two worlds: use of country systems without fiduciary risks (ex-post disbursement)

# The Debate on Aid Modalities in a Nutshell



	Benefits	Transaction Costs	Risks
<b>Project Aid</b>	potentially high but sometimes debated, often geographically or temporally limited	High	Low
<b>Budget Support</b>	potentially high, cross-cutting & systemic	Low-Medium	High
<b>Aid on Delivery</b>	potentially high, cross-cutting & systemic (but so far, little evidence)	Low	Low



## **Does it really make a difference?**

- ✓ Does fiduciary risk due to fungibility really differ fundamentally between aid modalities?
- ✓ If it does, what can donors do to about it?



# A Basic Model of Aid Modalities



# A Basic Fungibility Model



**Known ,technology‘ for poverty reduction, same for all**

**Two categories of public expenditure:**

- pro-poor expenditure  $ppe$
- other non-poverty-reducing expenditure  $x_0$

**Recipient government optimizes utility function:**

$$W^G = ppe^\Theta x_0^{1-\Theta} \quad s.t. \quad ppe + x_0 \leq Y + T \quad 0 < \Theta < 1$$

„commitment to poverty reduction“

**Altruistic donor:**

$$W^D = ppe \quad T \leq A$$

**One period, different aid modalities**



## Project Aid

- ✓ Donor spends aid directly on pro-poor expenditure:  $T = ppe^D$

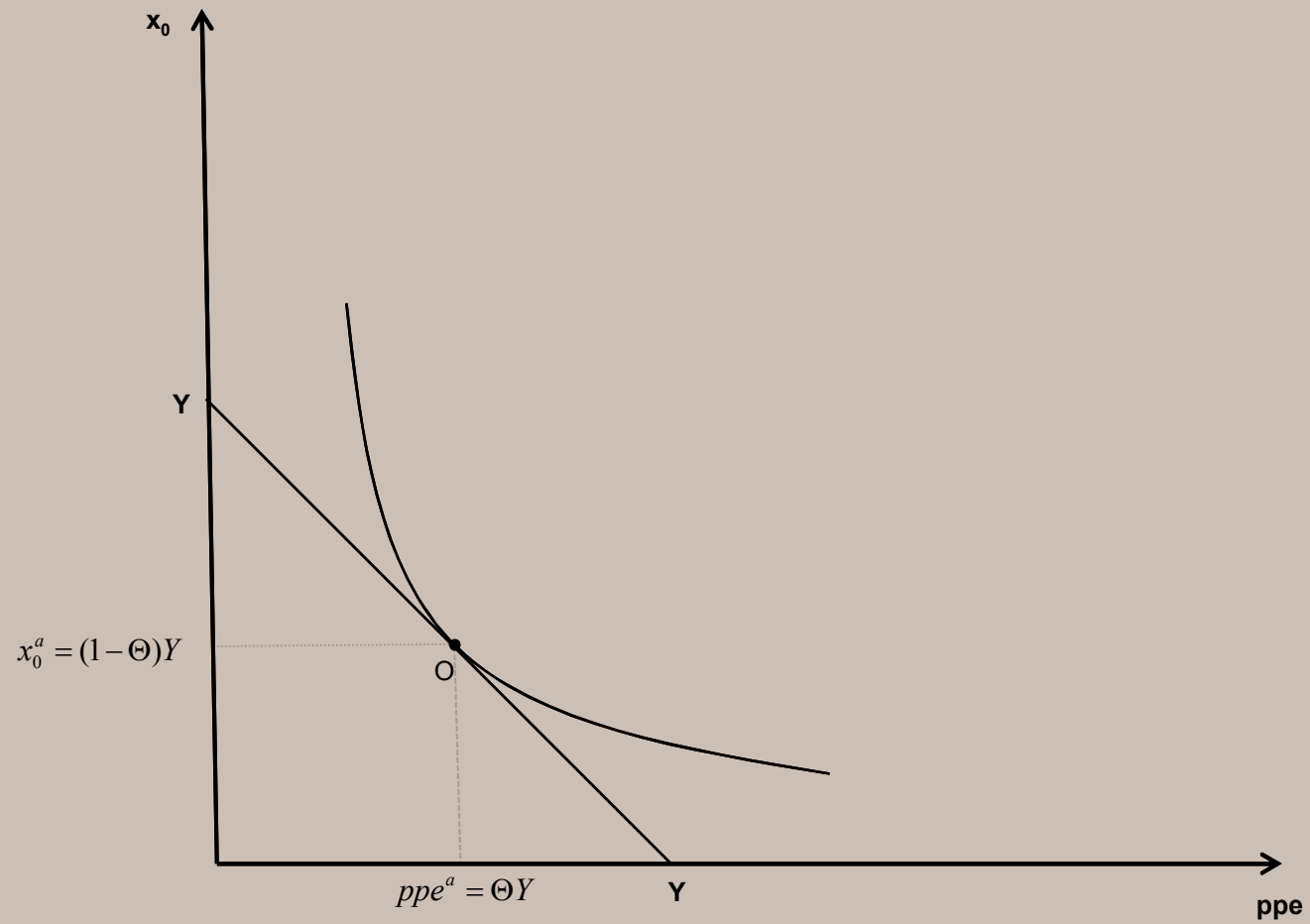
## General Budget Support

- ✓ Non-earmarked aid transfer:  $T = A$

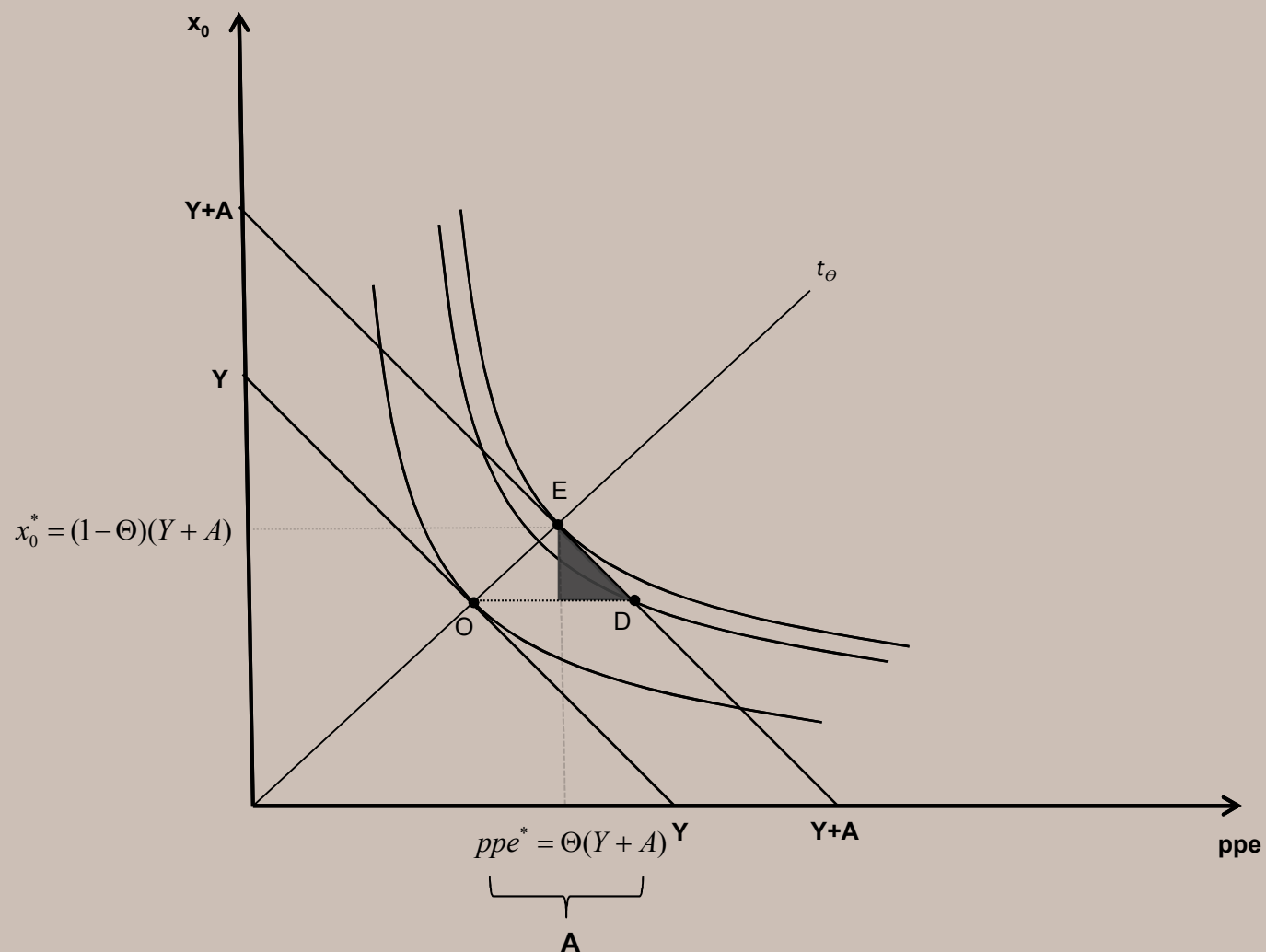
## Aid on Delivery / Results-based Aid

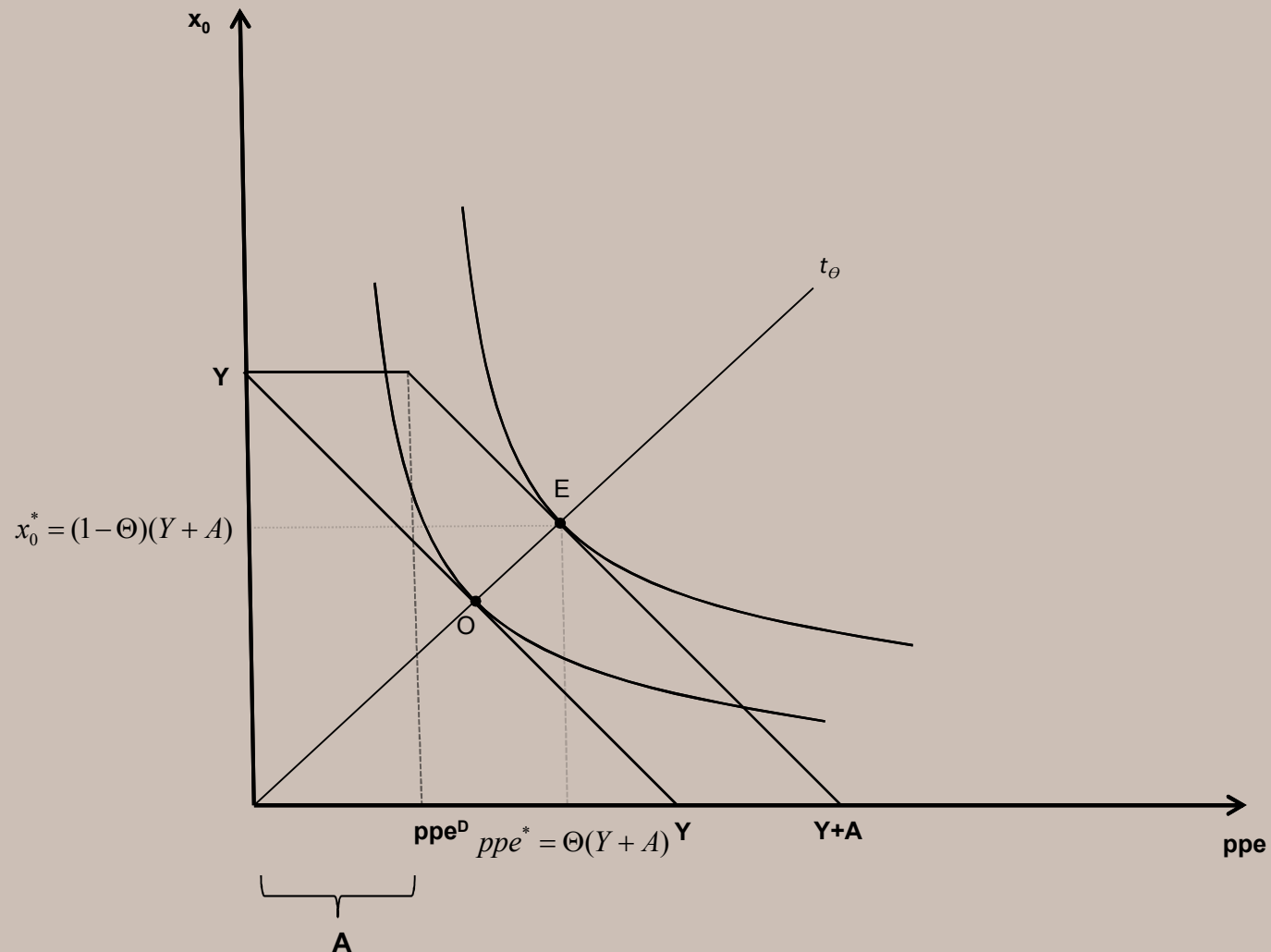
- ✓ Amount transferred conditional on government's own expenditure:  $T = \varepsilon \cdot ppe^a$

# Autarky



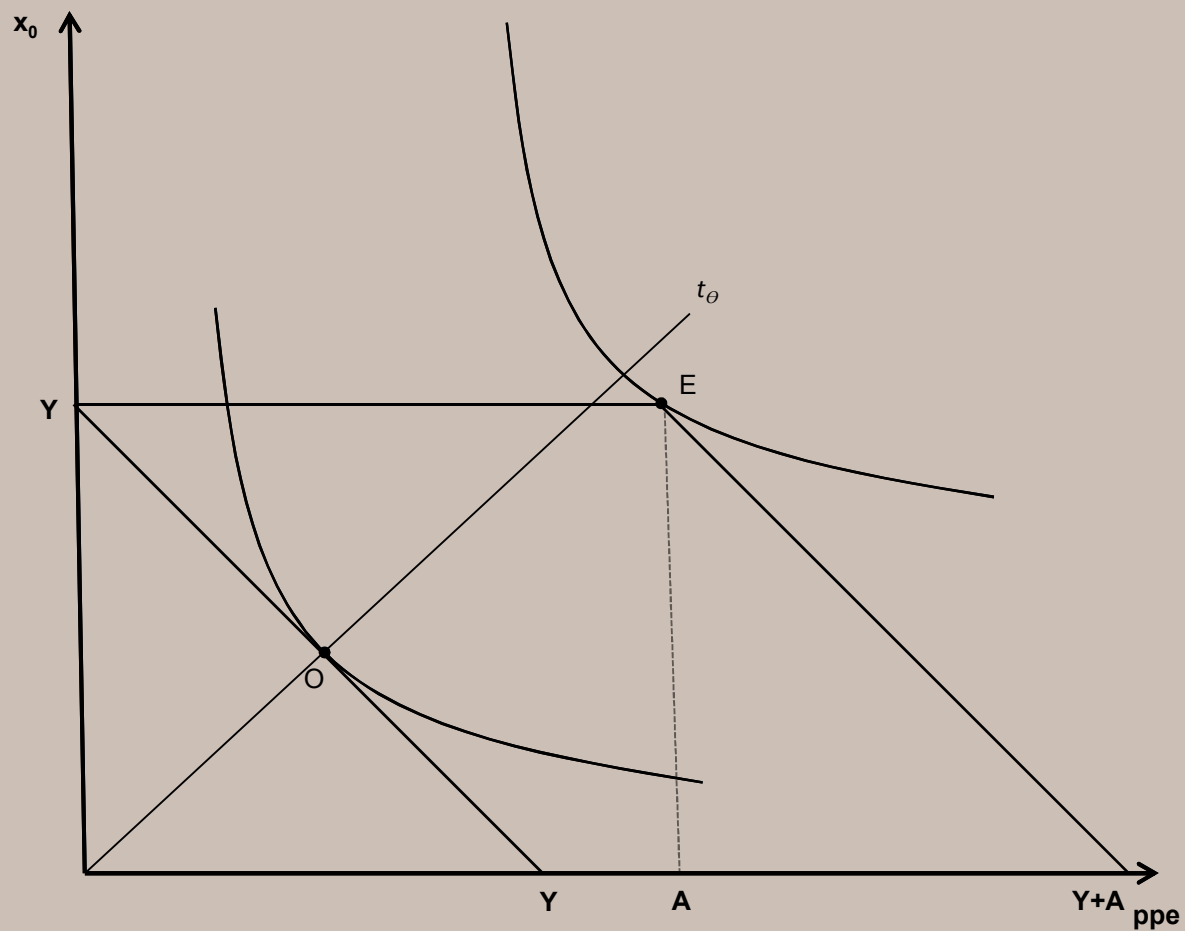
# General Budget Support



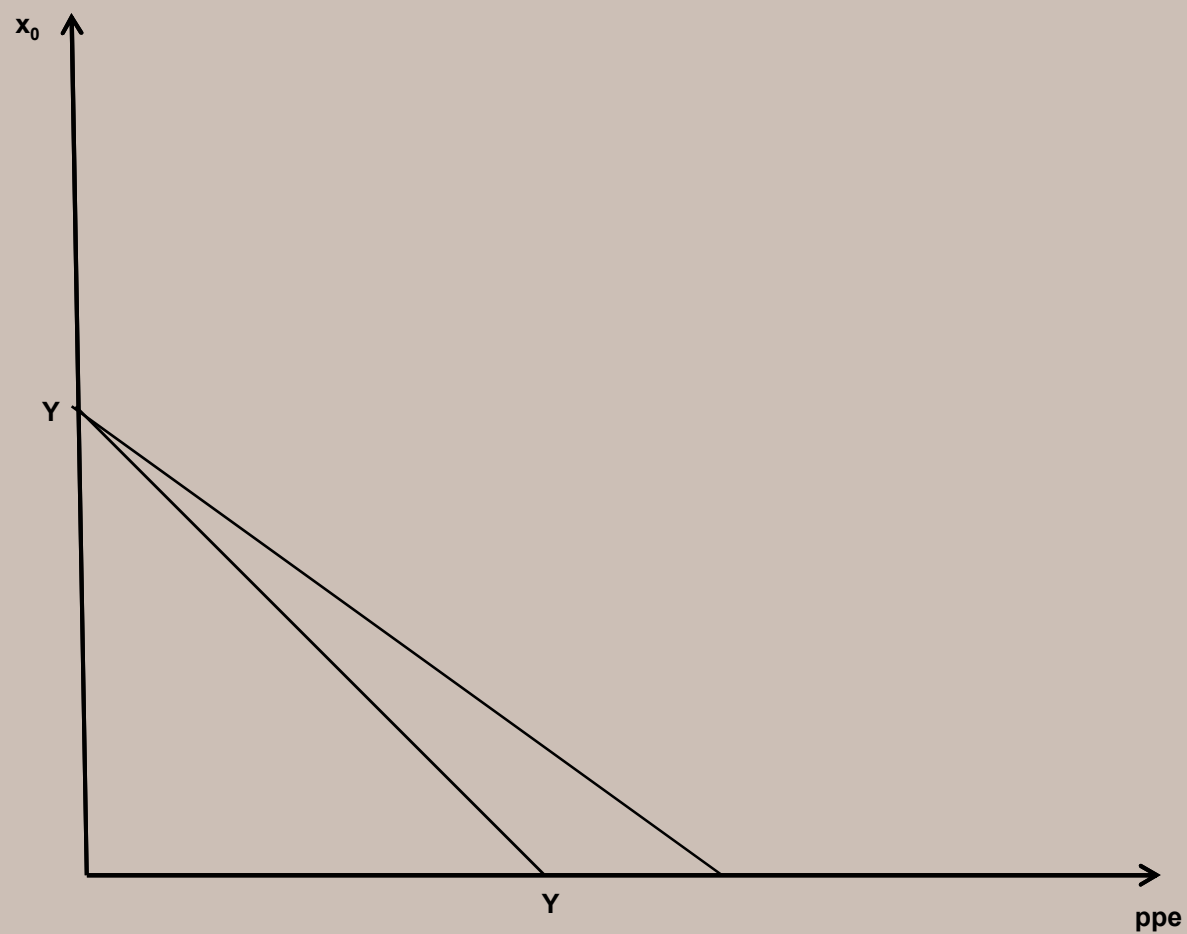




# Base Case: Complete Information

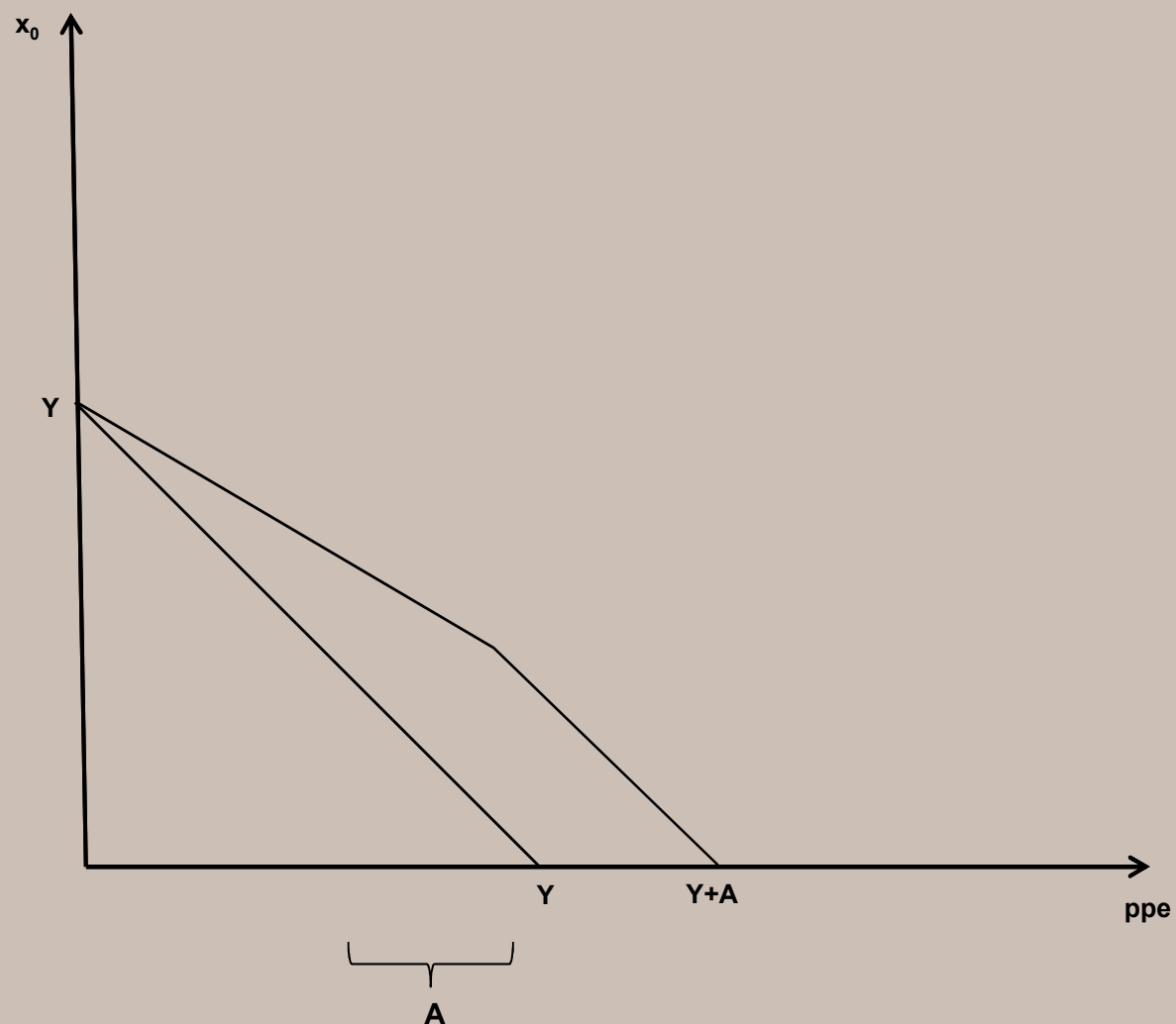


# Aid on Delivery

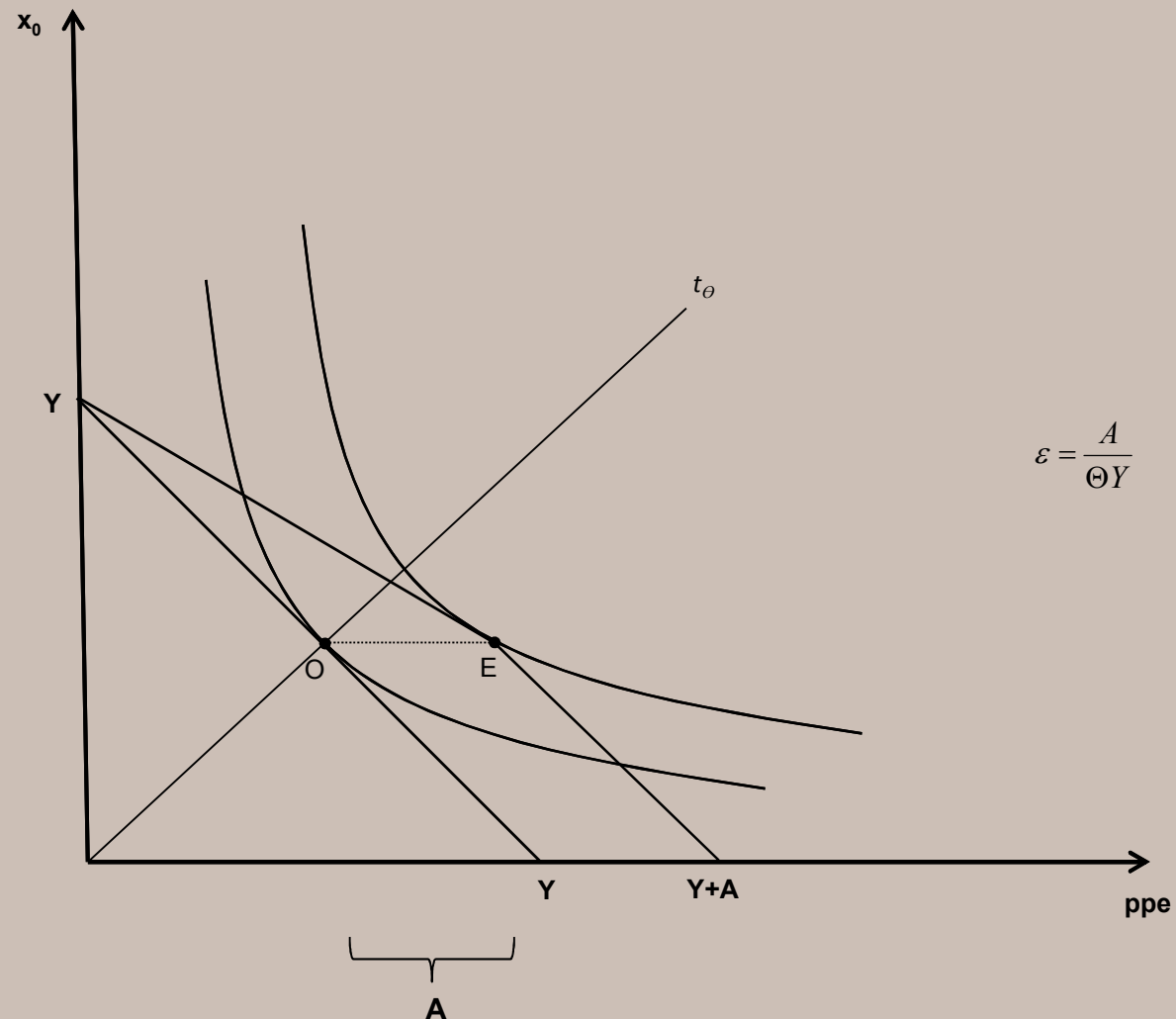




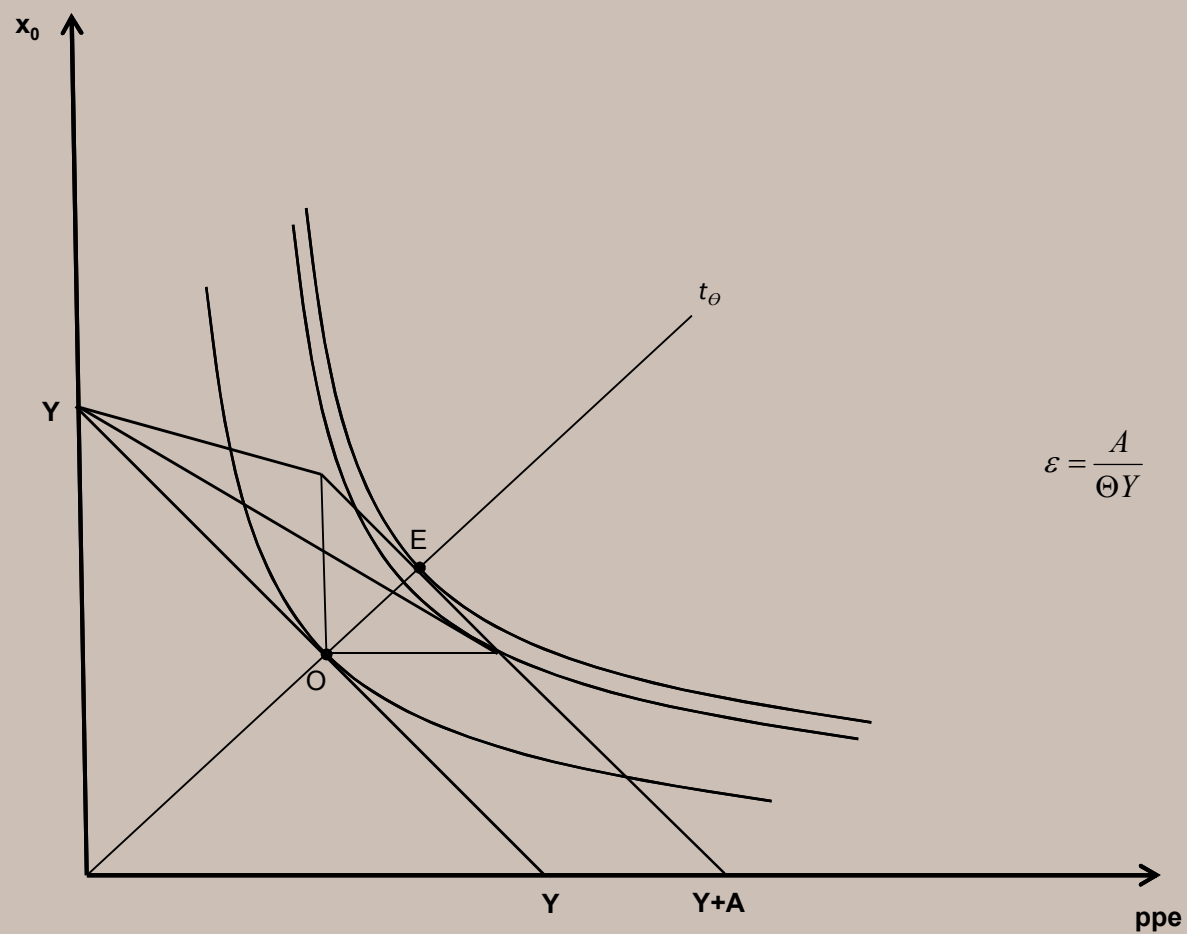
# Aid on Delivery



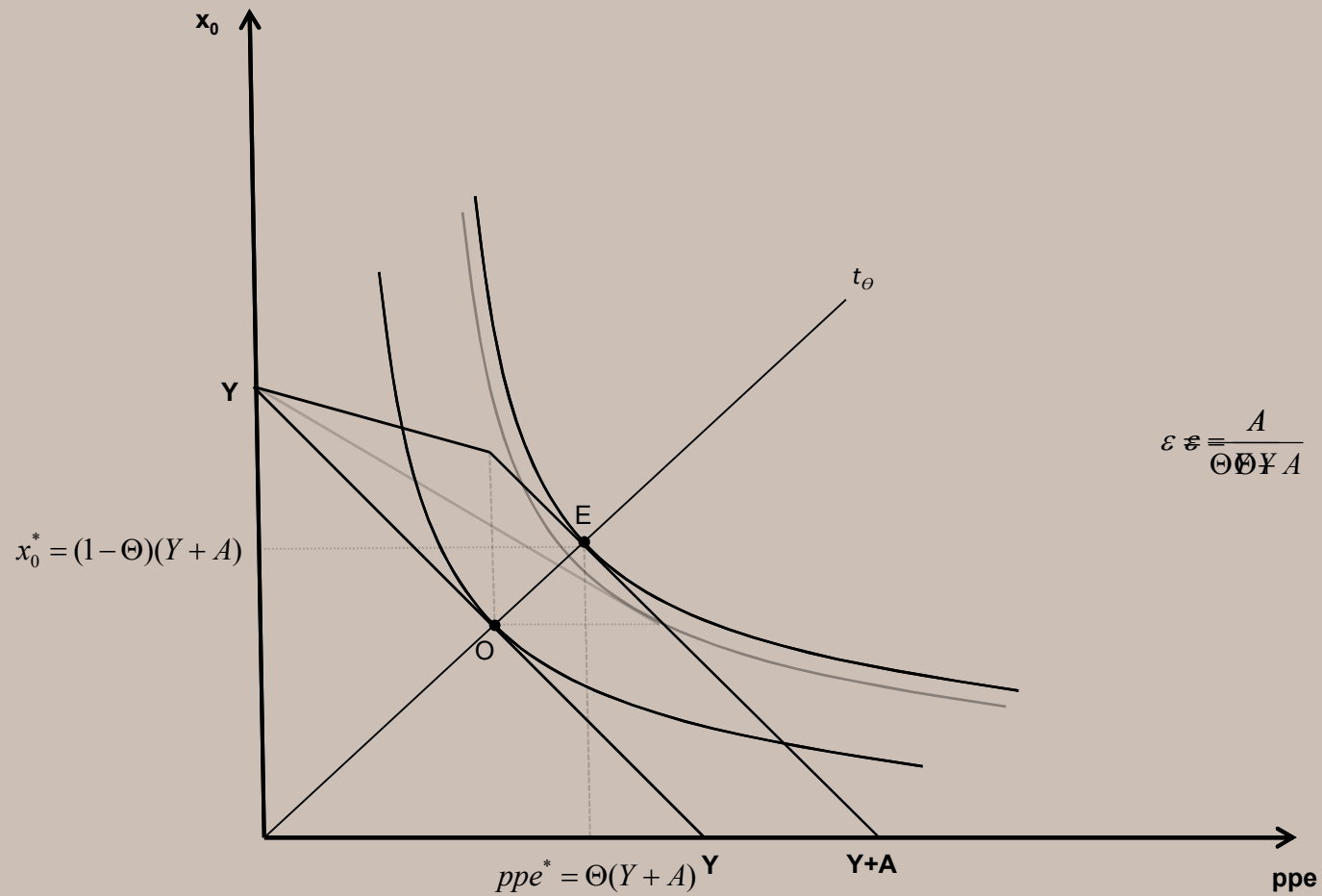
# Aid on Delivery without Fungibility



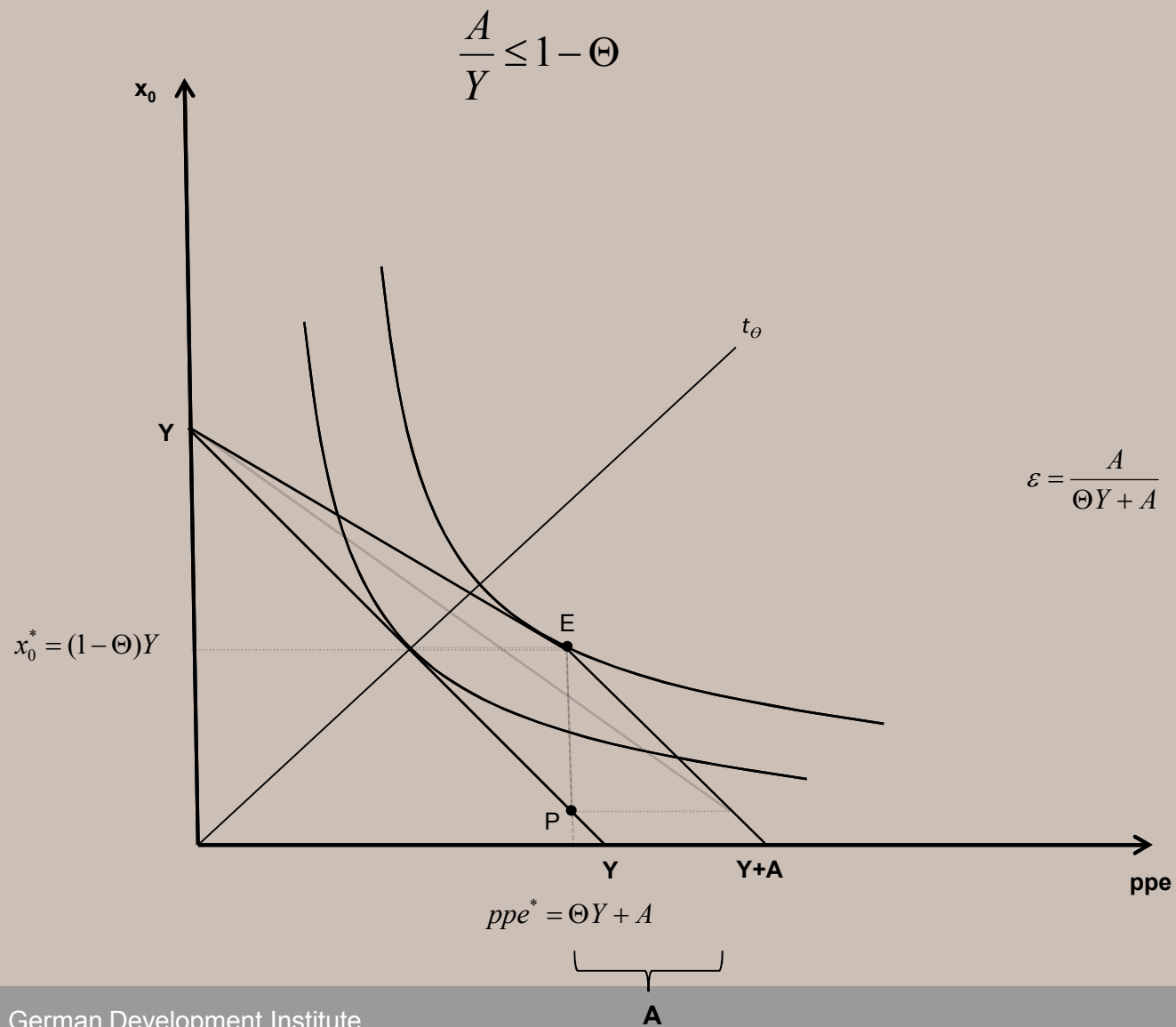
# Aid on Delivery with Fungibility



# Aid on Delivery with Fungibility



# Fungible Aid on Delivery with Fully Informed Donor



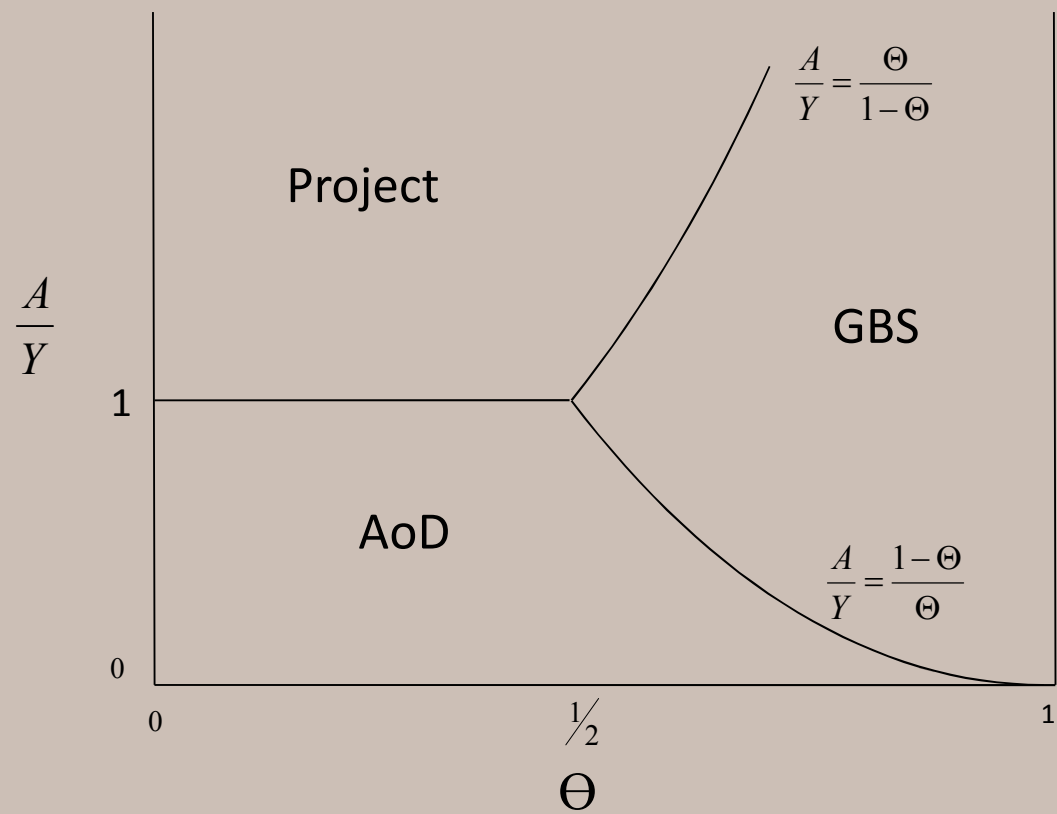
# Aid Effectiveness with full information



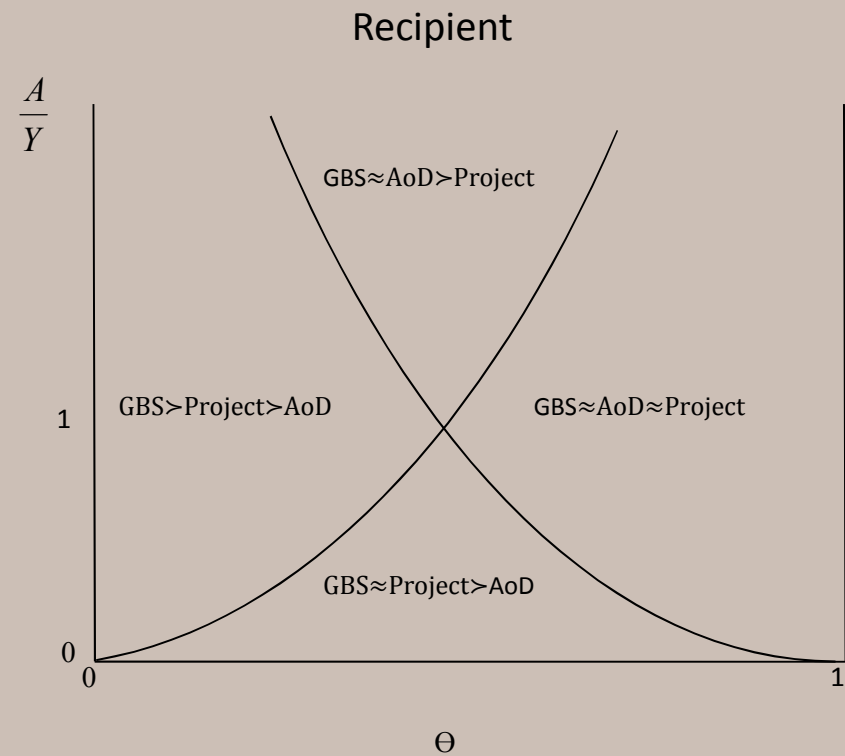
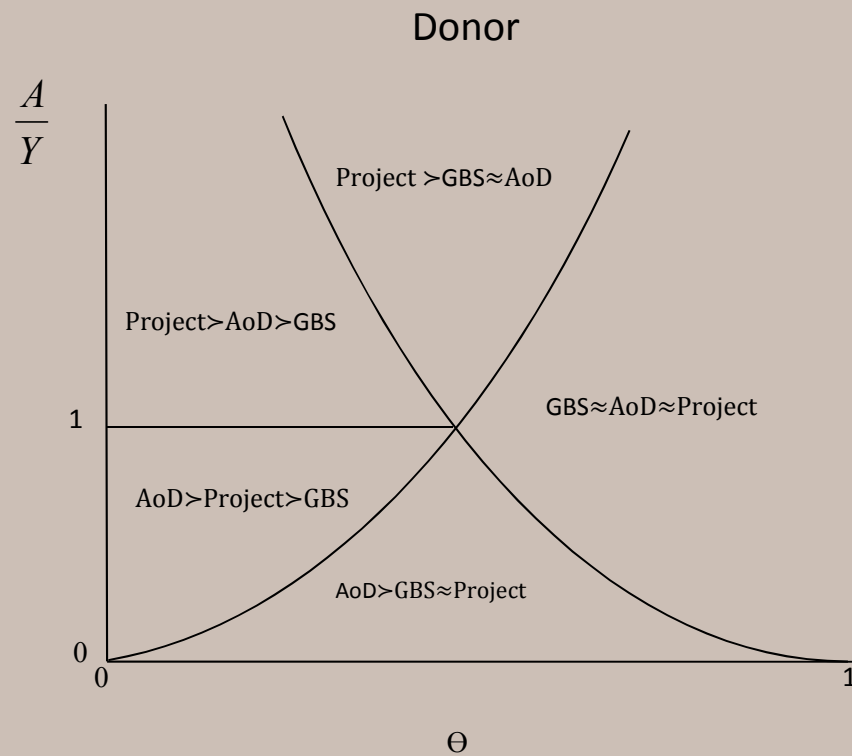
Aid Modality	Aid Dependency $\leftrightarrow$ Commitment	$ppe^*$ (Donor Utility)	Government Utility
GBS	-	$\Theta(Y + A)$	$[\Theta(Y + A)]^\Theta [(1 - \Theta)(Y + A)]^{1-\Theta}$
Project Aid	$\frac{A}{Y} > \frac{\Theta}{1-\Theta}$	$A$	$A^\Theta Y^{1-\Theta}$
	$\frac{A}{Y} \leq \frac{\Theta}{1-\Theta}$	$\Theta(Y + A)$	$[\Theta(Y + A)]^\Theta [(1 - \Theta)(Y + A)]^{1-\Theta}$
AoD	$\frac{A}{Y} \leq 1 - \Theta$	$\Theta Y + A$	$(\Theta Y + A)^\Theta [(1 - \Theta)Y]^{1-\Theta}$
	$\frac{1-\Theta}{\Theta} > \frac{A}{Y} > 1 - \Theta$	$Y^*$	$(1 - \Theta)^{1-\Theta} Y^*$
	$\frac{A}{Y} \geq \frac{1-\Theta}{\Theta}$	$\Theta(Y + A)$	$[\Theta(Y + A)]^\Theta [(1 - \Theta)(Y + A)]^{1-\Theta}$

\* Assuming the donor only disburses the amount necessary to achieve  $ppe = Y$ , but ignoring any possible positive or negative utility derived from undisbursed aid funds.

# Relative Effectiveness of Aid Modalities



# Preferred Aid Modalities







- ✓ Assume  $\Theta$  is private information of the government
- ✓ Donor gives government the choice between project aid and GBS or between project aid and AoD
- ✓ In order to receive GBS or AoD, the government has to grant the donor insight into its budget plan
- ✓ Government can lie about its commitment
- ✓ ‚Naive‘ donor bases decision on aid modality on this ‚signal‘ (cheap talk)

# Case A: Project versus GBS



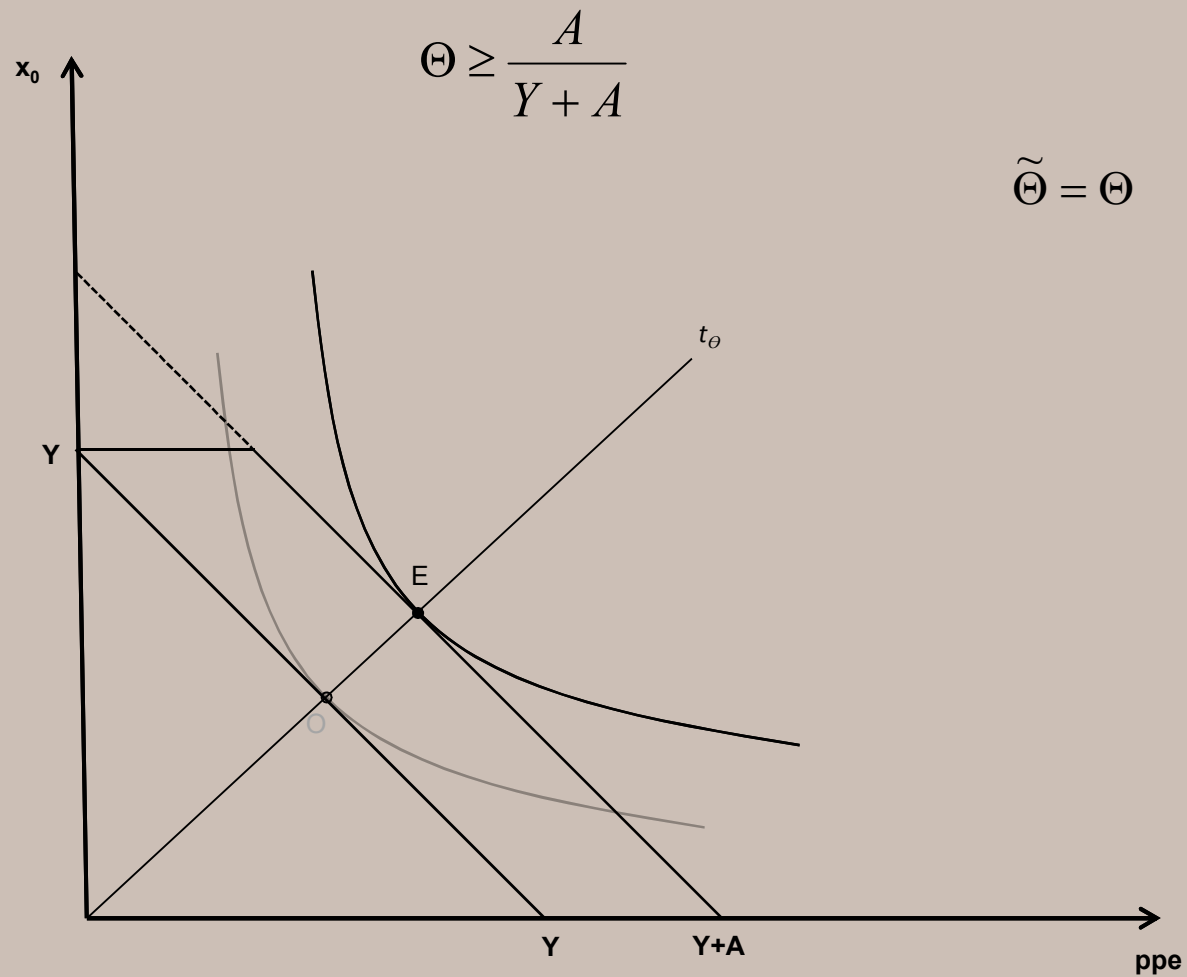
✓ Donor gives GBS for

$$\tilde{\Theta} \geq \frac{A}{Y + A}$$

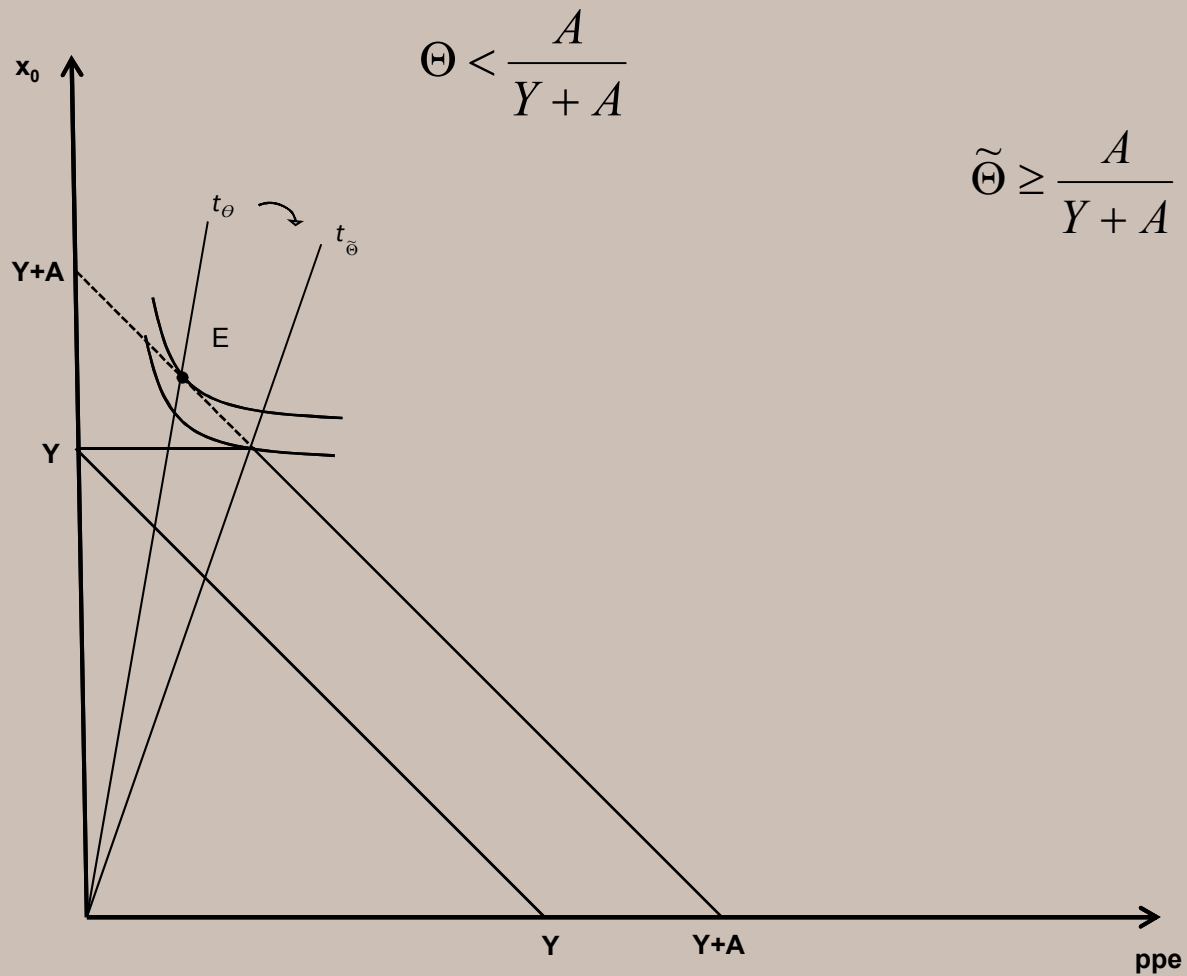
✓ Donor gives project aid for

$$\tilde{\Theta} < \frac{A}{Y + A}$$

# Case A: Project versus GBS



# Case A: Project versus GBS



## Case B: Project versus Aid on Delivery



✓ Donor gives AoD for

$$1 > \frac{A}{Y} < \frac{1 - \tilde{\Theta}}{\tilde{\Theta}}$$

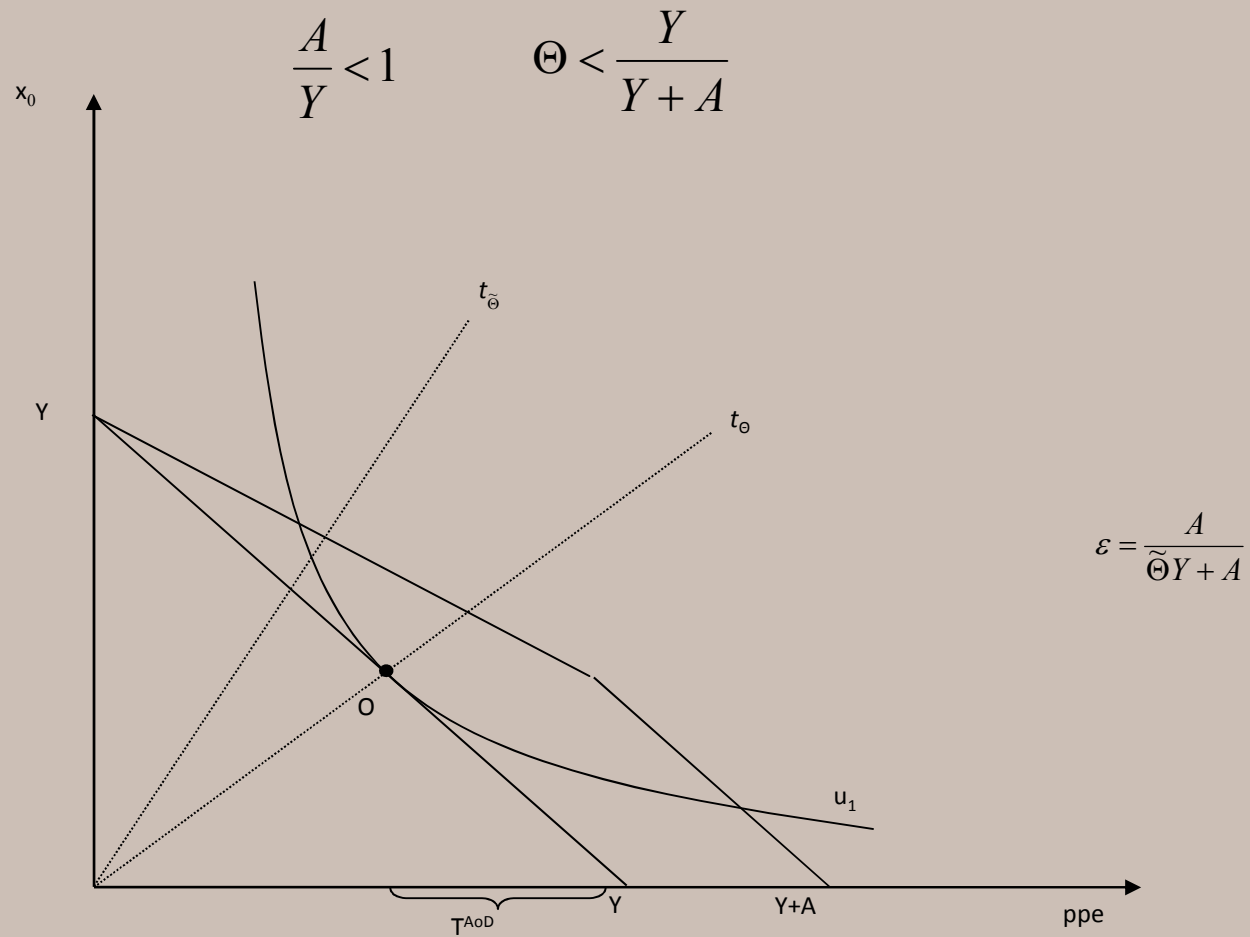
✓ Donor gives project aid for

$$1 < \frac{A}{Y} > \frac{\tilde{\Theta}}{1 - \tilde{\Theta}}$$

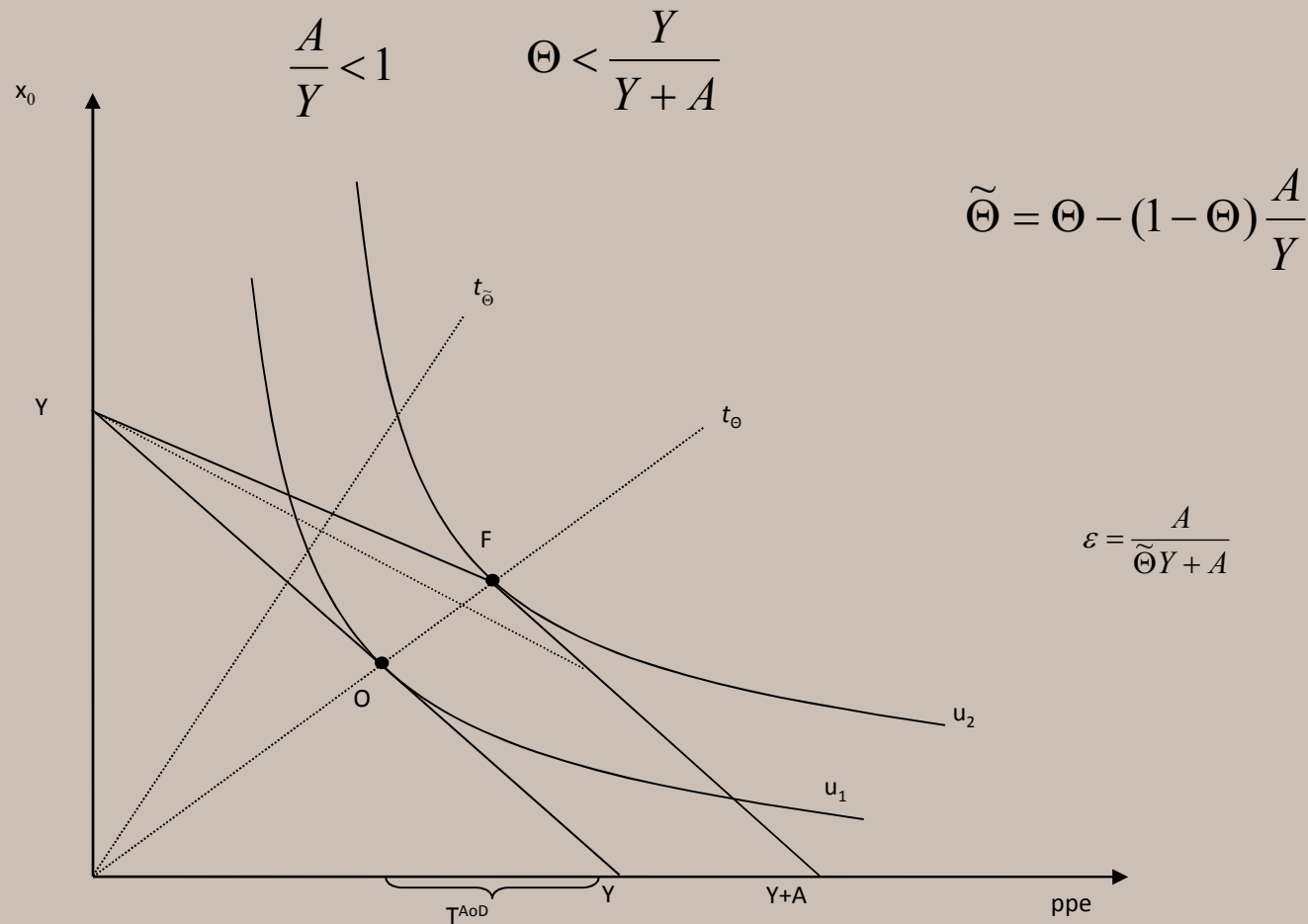
✓ Donor is indifferent for

$$\frac{\tilde{\Theta}}{1 - \tilde{\Theta}} > \frac{A}{Y} > \frac{1 - \tilde{\Theta}}{\tilde{\Theta}}$$

# Case B: Project versus AoD



# Case B: Project versus AoD



# Aid Effectiveness with asymmetric information



Modality Choice	$\frac{A}{Y}$	$\Theta$	$\tilde{\Theta}$	$\tilde{\Theta} \begin{matrix} \geq \\ \leq \\ = \end{matrix} \Theta$	$ppe^*$
Project / GBS	$\forall$	$\Theta < \frac{A}{Y+A}$	$\frac{A}{Y+A}$	$>$	$\Theta(Y+A)$
		$\Theta \geq \frac{A}{Y+A}$	$\Theta$	$=$	
Project / AoD	$\leq 1$	$\Theta < \frac{Y}{Y+A}$	$\Theta - (1 - \Theta)\frac{A}{Y}$	$<$	$\Theta(Y+A)$
		$\Theta \geq \frac{Y}{Y+A}$	$\Theta$	$=$	
	$> 1$	$\Theta \geq \frac{A}{Y+A}$	$\Theta$	$=$	$Y$
		$\frac{Y}{Y+A} \leq \Theta < \frac{A}{Y+A}$	$\frac{A}{Y+A}$	$>$	
		$\Theta < \frac{Y}{Y+A}$	$\frac{A}{Y+A}$	$>$	





# Multi-Donor Aid



- ✓ Two donors  $D_1$  and  $D_2$
- ✓ Shares  $\alpha$  and  $1-\alpha$  of total aid budget  $A$
- ✓  $D_1$  offers either GBS or project aid
- ✓  $D_2$  offers AoD and adjusts matching element  $\varepsilon$
- ✓ Same information asymmetry regarding  $\Theta$
- ✓ Each donor only considers her own aid in her decision
- ✓ Government knows total aid budget  $A$

# Aid Effectiveness with Uncoordinated Aid



$$\frac{A}{Y} \leq 1$$

	$\Theta$	$\tilde{\Theta}$	$ppe^*$
$\Theta < \frac{Y}{Y+(1-\alpha)A}$	$\Theta < \frac{A}{Y+A} \left(1 - \frac{\alpha^2 A}{Y+\alpha A}\right)$	$\frac{\alpha A}{Y+\alpha A}$	$A \left(1 - \frac{\alpha^2 A}{Y+\alpha A}\right)$
	$\Theta \geq \frac{A}{Y+A} \left(1 - \frac{\alpha^2 A}{Y+\alpha A}\right)$	$\frac{\alpha A}{Y+\alpha A}$	$\Theta(Y+A)$
		$\Theta > \frac{\alpha A}{Y+\alpha A}$	$\Theta - (1 - \Theta - \alpha) \frac{A}{Y}$
$\Theta \geq \frac{Y}{Y+(1-\alpha)A}$		$\Theta$	$\Theta(Y+A)$

$$\frac{A}{Y} > 1$$

$\frac{(1-\alpha)A}{Y}$	$\Theta$	$\tilde{\Theta}$	$\tilde{\Theta} \begin{matrix} \leq \\ \geq \end{matrix} \Theta$	$ppe^*$
$1 < \frac{(1-\alpha)A}{Y}$	$\Theta \geq \frac{Y}{Y+A}$	$\max\left(\frac{\alpha A}{Y+\alpha A}; \frac{(1-\alpha)A}{Y+(1-\alpha)A}\right)^*$	$\geq$	$\Theta(Y+A)$
	$\Theta < \frac{Y}{Y+A}$			$Y$
$\frac{Y}{Y+\alpha A} < \frac{(1-\alpha)A}{Y} \leq 1$	$\Theta \geq \frac{Y}{Y+A}$	$\max\left(\frac{\alpha A}{Y+\alpha A}; \frac{Y}{Y+(1-\alpha)A}\right)^*$	$\geq$	$\Theta(Y+A)$
	$\Theta < \frac{Y}{Y+A}$			$Y$
$\frac{(1-\alpha)A}{Y} \leq \frac{Y}{Y+\alpha A}$	see Table 3			

\*For  $\Theta > \max(\cdot; \cdot)$ , the government can also set  $\tilde{\Theta} = \Theta$



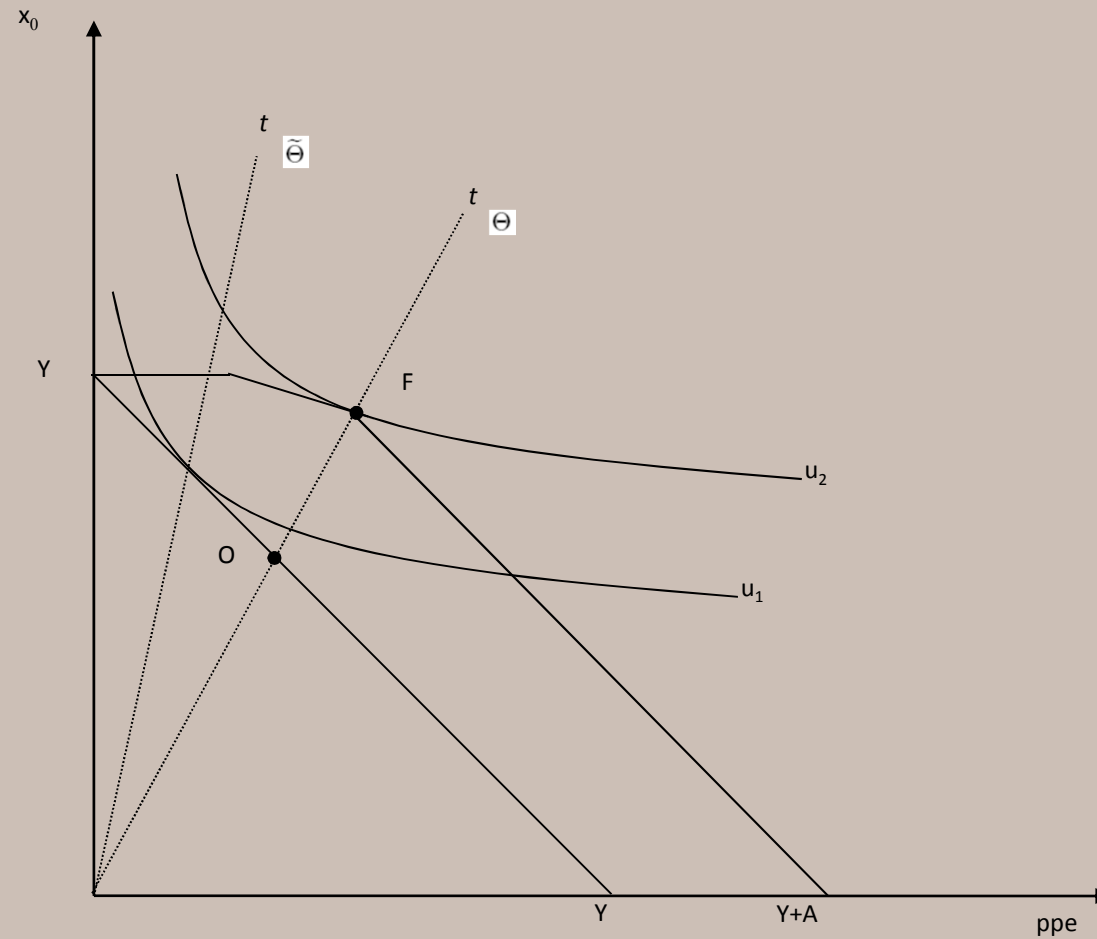
- ✓ Donors coordinate shares  $\alpha$  and  $1-\alpha$  allocated to GBS and AoD
- ✓ Donors can establish a threshold  $z$  for government signal below which they convert either the GBS tranche or the entire aid budget into project aid

# Aid Effectiveness with donor coordination



Threshold	$\frac{A}{Y}$ / $\alpha$	$\Theta$	$\tilde{\Theta}$	$ppe^*$
no threshold	$\frac{A}{Y} \leq 1$	$\Theta \geq \frac{Y+\alpha A}{Y+A}$ $\frac{(1-\alpha)A}{Y+A} < \Theta < \frac{Y+\alpha A}{Y+A}$ $\Theta \leq \frac{(1-\alpha)A}{Y+A}$	$\Theta$ $1 - (1-\Theta)\frac{Y+A}{Y+\alpha A}$ $\tilde{\Theta} \rightarrow 0$	$\Theta(Y+A)$ $\Theta(Y+A)$ $\lim_{\tilde{\Theta} \rightarrow 0} ppe = (1-\alpha)A$
	$\frac{A}{Y} > 1$ $\alpha = \frac{A-Y}{2A}$	$\Theta \geq \frac{Y+\alpha A}{Y+A}$ $\Theta < \frac{Y+\alpha A}{Y+A}$	$\Theta$ $\frac{Y+\alpha A}{Y+A}$	$\Theta(Y+A)$ $(1-\alpha)A = \frac{Y+A}{2}$
threshold both tranches	$\alpha > \frac{A-Y}{2A}$	$\Theta \geq \frac{Y+\alpha A}{Y+A}$ $\frac{z(Y+\alpha A)+(1-\alpha)A}{Y+A} \leq \Theta < \frac{Y+\alpha A}{Y+A}$ $\underline{\Theta} \leq \Theta < \frac{z(Y+\alpha A)+(1-\alpha)A}{Y+A}$ $\Theta < \underline{\Theta}$	$\Theta$ $1 - (1-\Theta)\frac{Y+A}{Y+\alpha A}$ $\Theta$ $z$	$\Theta(Y+A)$ $\Theta(Y+A)$ $A$ $\Theta[Y + (\alpha + \frac{1-\alpha}{z})A]$
threshold fixed tranche	$\alpha > \frac{A-Y}{2A}$	$\Theta \geq \frac{Y+\alpha A}{Y+A}$ $\frac{z(Y+\alpha A)+(1-\alpha)A}{Y+A} \leq \Theta < \frac{Y+\alpha A}{Y+A}$ $\underline{\Theta} \leq \Theta < \frac{z(Y+\alpha A)+(1-\alpha)A}{Y+A}$ $\Theta < \underline{\Theta}$	$\Theta$ $1 - (1-\Theta)\frac{Y+A}{Y+\alpha A}$ $\tilde{\Theta} \rightarrow 0$ $z$	$\Theta(Y+A)$ $\Theta(Y+A)$ $\lim_{\tilde{\Theta} \rightarrow 0} ppe = A$ $\Theta[Y + (\alpha + \frac{1-\alpha}{z})A]$

# Coordinated Aid: Threshold Fixed Tranche





- ✓ Even with full information, GBS and project aid are equivalent over a wide range of aid dependency and commitment
- ✓ With full information: for low and moderate aid dependency, AoD is clearly more effective than project aid or GBS
- ✓ With asymmetric information, this advantage is eroded over a wide range of aid dependency / commitment combinations



- ✓ Opposing incentives for government to over- or understate its commitment with GBS and AoD
- ✓ As long as multiple donors do not coordinate their provision of different aid modalities, very limited scope to exploit this to reduce fiduciary risk
- ✓ With a coordinated modality mix, donors can induce „relatively uncommitted“ governments to self-select into project aid
- ✓ If recipient selectivity can exclude that government commitment is below this lower threshold, a coordinated GBS/AoD approach has no higher fiduciary risk than project aid





- ✓ In most circumstances, aid modalities do not differ fundamentally with regard to fiduciary risks (all aid is fungible)
- ✓ no aid modality is strictly better than others
- ✓ Strong argument for programme-based aid, even when abstracting from transaction costs
- ✓ But: donor coordination key to effectiveness of modality mix

## Policy Message

- ✓ Donor coordination matters not only with regard to fragmentation and transaction costs, but also to risks
- ✓ If donors would take their commitments to coordinate and harmonize more seriously, they would need to worry much less about fiduciary risks of different aid modalities and could focus on their potential benefits

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**Thank You!**

Leiderer, S. (2012): Fungibility and the choice of aid modalities: the red herring revisited,  
UNU-WIDER Working Paper 2012/68