Trade Policy and the Real Exchange Rate

Background

- OECD tension with China
- Linked to a combination of
  - Goods market policies
  - Massive one-way flows in capital
- Response is a mix of
  - Calls for currency market changes
  - Calls for import tariffs

Analytical model

- Two sectors
  - Tradable
  - Non-tradable
- Trade in Goods
- Capital flows are possible in the model
- Capital and goods flows interact and affect the real exchange rate

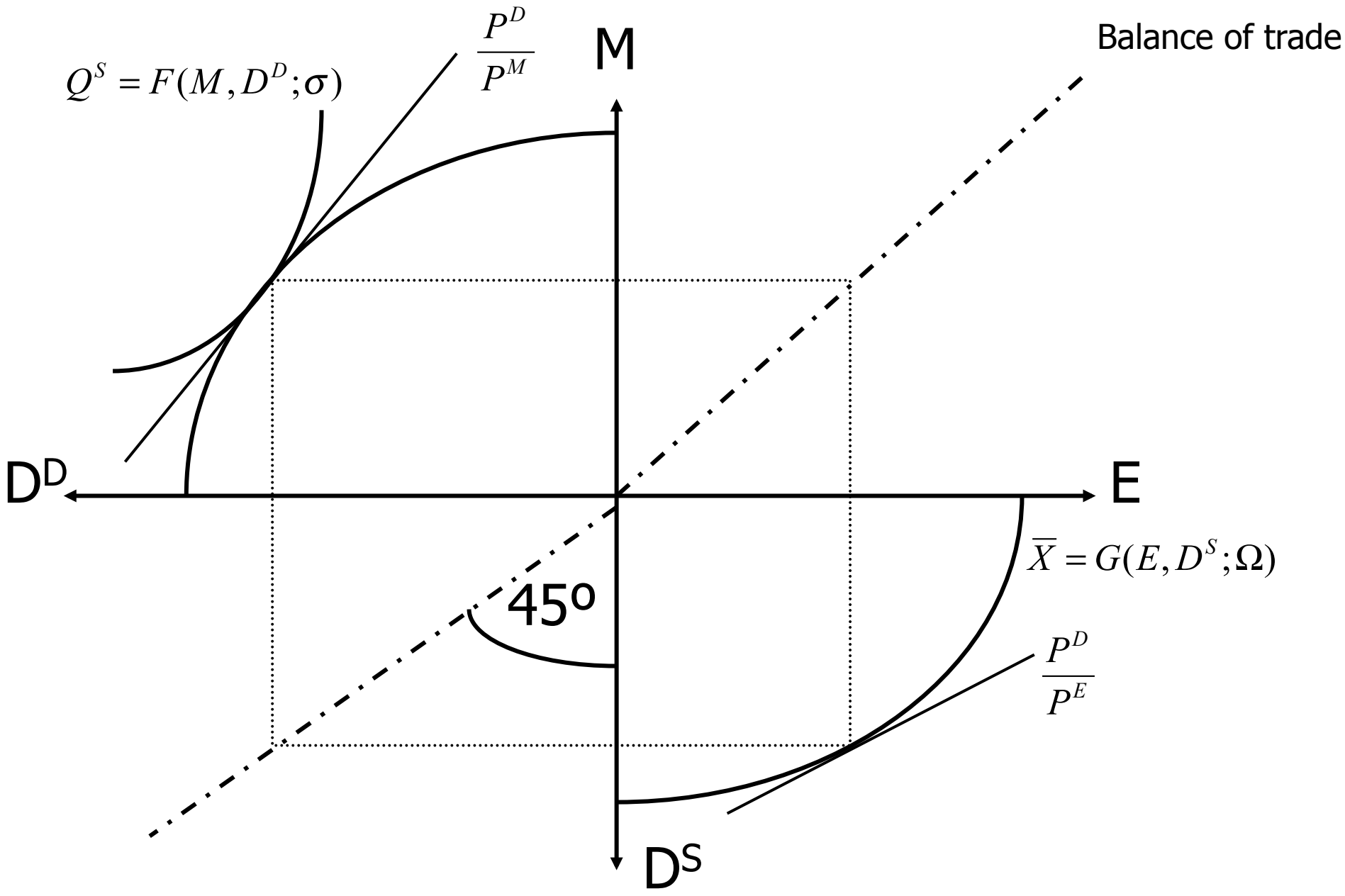
Properties

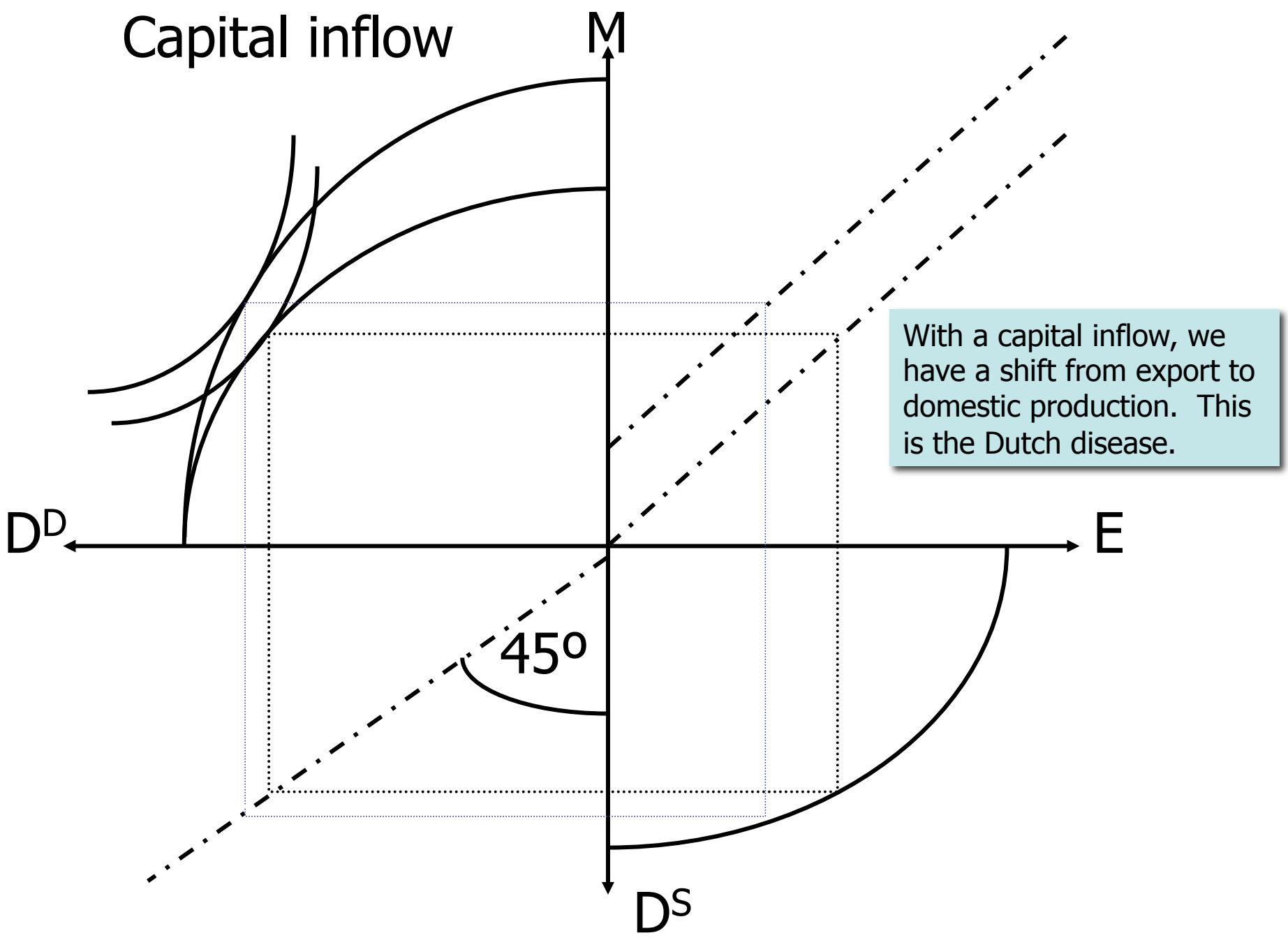
- CES preferences in final demand over domestic good/service D and imports M

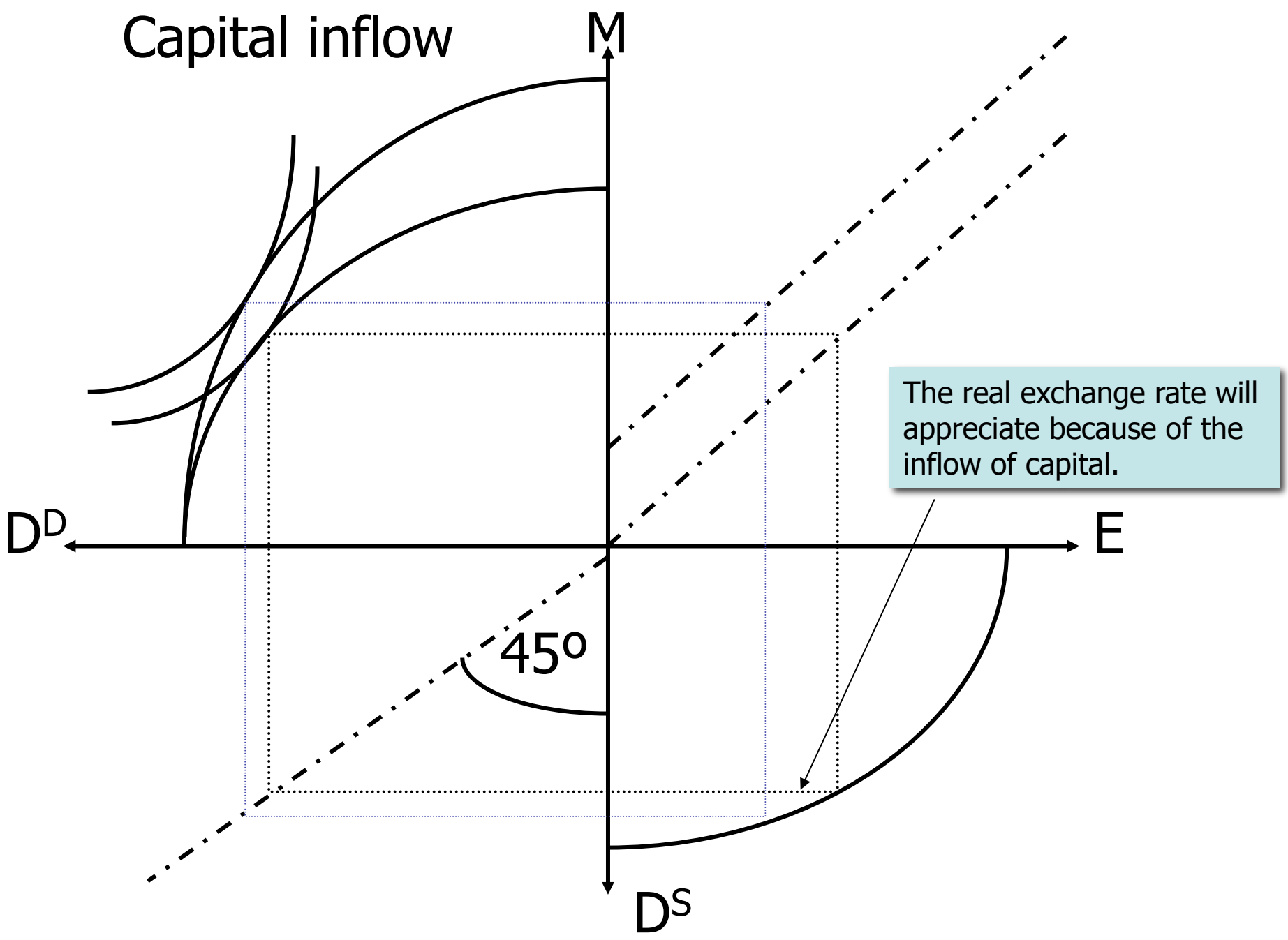
$$y = \left[b_d D^{\rho} + b_m M^{\rho} \right]^{1/\rho} \quad 1 > \rho > 0$$

- A CET transformation technology between a domestic good D and an export Good E
- A fixed balance of trade
- Fixed government demand and investment (example of “macroeconomic closure”)
- Fixed terms-of-trade (small country assumption)
- Macro identities hold (income constraints, balance of trade, etc.

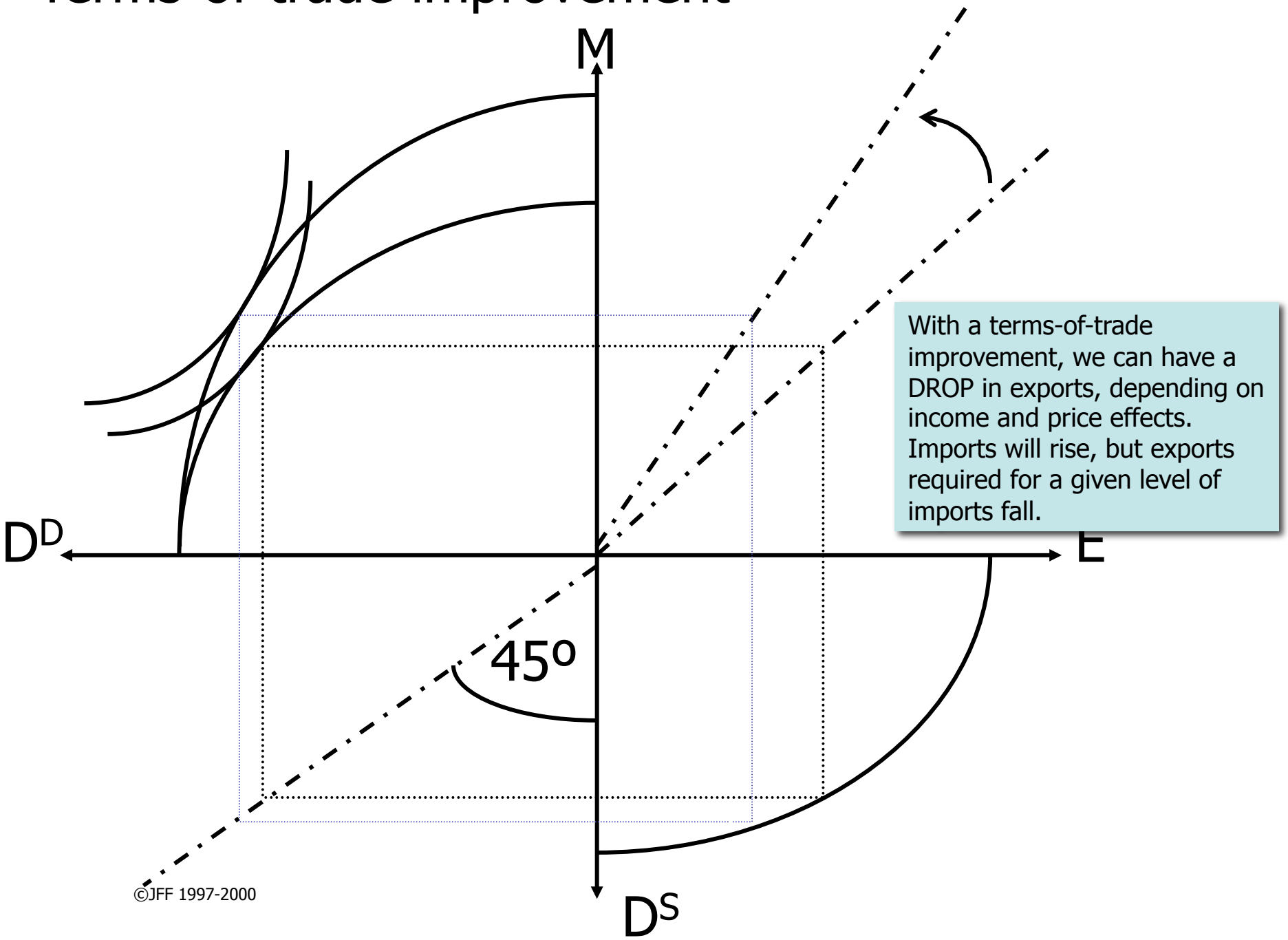
Basic Model Structure




Capital inflow
M
D^D
E
45º
D^S
With a capital inflow, we have a shift from export to domestic production. This is the Dutch disease.


Capital inflow
M
D^D
E
45º
D^S
The real exchange rate will appreciate because of the inflow of capital.

Terms-of-trade improvement



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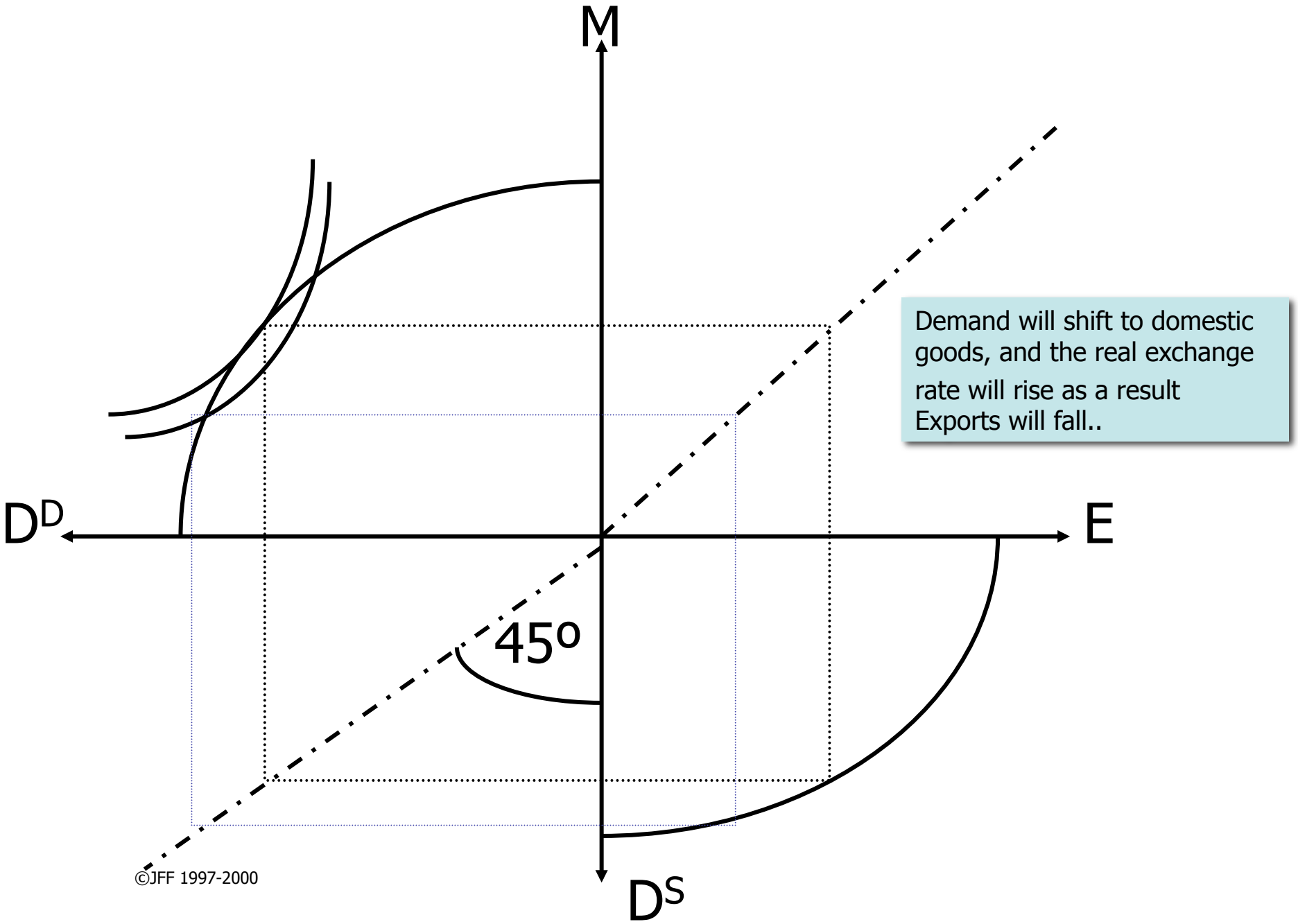
Import Tariff



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Policy Effects and Responses

- Capital inflows can affect the real exchange rate. They are linked to the trade balance.
- Trade policy, given capital flows, will also affect the real exchange rate and can impact on exports.
- Changes in the terms of trade (goods market conditions) may also affect the real exchange rate.

The 123 model in Excel

1-2-3 (CGE) Model for Sri Lanka, 1991

from Devarajan-Go-Lewis-Robnson-Sinko (1997)

note: use "solver", under the "Tools" menu. Solver settings have been set.

Parameters		Exogenous Variables	Base Year	Current	Endogenous Variables	Base Year	Current	Cur/Base	Eq.#	Equations	
										Real Flows	
Elasticity for CET (st)	0.60	World Price of Imports (wm)	0.89	0.89	Export Good (E)	0.33	0.33	1.00	1	CET Transformation (CETEQ)	1.00
Elasticity for CES/Q (sq)	0.60	World Price of Exports (we)	1.01	1.01	Import Good (M)	0.50	0.50	1.00	2	Supply of Goods (ARMG)	1.18
					Supply of Domestic Good (Ds)	0.67	0.67	1.00	3	Domestic Demand (DEM)	1.18
Scale for CET (at)	2.22	Import Tariffs (tm)	0.13	0.13	Demand of Domestic Good (Dd)	0.67	0.67	1.00	4	E/D Ratio (EDRAT)	0.49
Share for CET (bt)	0.77	Export Duties (te)	0.01	0.01	Supply of Composite Good (Qs)	1.18	1.18	1.00	5	M/D Ratio (MDRAT)	0.75
Rho for CET (rt)	2.67	Indirect Taxes (ts)	0.08	0.08	Demand of Composite Good (Qd)	1.18	1.18	1.00		*Nominal Flows*	
		Direct Taxes (ty)	0.03	0.03					6	Revenue Equation (TAXEQ)	0.20
Scale for CES/Q (aq)	1.97				Tax Revenue (TAX)	0.20	0.20	1.00	7	Total Income Equation (INC)	1.13
Share for CES/Q (bq)	0.38	Savings rate (sy)	0.17	0.17	Total Income (Y)	1.13	1.13	1.00	8	Savings Equation (SAV)	0.27
Rho for CES/Q (rq)	0.67	Govt. Consumption (G)	0.10	0.10	Aggregate Savings (S)	0.27	0.27	1.00	9	Consumption Function (CONS)	0.83
		Govt. Transfers (tr)	0.12	0.12	Consumption (Cn)	0.83	0.83	1.00		*Prices*	
		Foreign Grants (ft)	0.02	0.02					10	Import Price Equation (PMEQ)	1.00
		Net Priv Remittances (re)	0.01	0.01	Import Price (Pm)	1.00	1.00	1.00	11	Export Price Equation (PEEQ)	1.00
		Foreign Saving (B)	0.08	0.08	Export Price (Pe)	1.00	1.00	1.00	12	Sales Price Equation (PTEQ)	1.08
		Output (X)	1.00	1.00	Sales Price (Pt)	1.08	1.08	1.00	13	Output Price Equation (PXEQ)	1.00
					Price of Supply (Pq)	1.00	1.00	1.00	14	Supply Price Equation (PQEQ)	1.00
					Price of Output (Px)	1.00	1.00	1.00	15	Numeraire (REQ)	1.00
					Price of Dom. Good (Pd)	1.00	1.00	1.00		*Equilibrium Conditions*	
					Exchange Rate (Er)	1.00	1.00	1.00	16	Domestic Good Market (DEQ)	0.00
									17	Composite Good Market (QEQ)	0.00
					Investment (Z)	0.25	0.25	1.00	18	Current Account Balance (CABAL)	0.08
					Government Savings (Sg)	-0.01	-0.01	1.00	19	Government Budget (GBUD)	-0.01
					Walras Law (Z-S)	0.00	0.00				

- 19 endogenous variables and equations
- variables are "scaled" as a share of GDP
- Basic inputs are macroeconomic accounts data

The 123 model in Excel

	K	L	M	N	O	P	Q	R	S	T	U
1											
2											
3											
4	**Eq.#**	**Equations**			**Data - Sri Lanka, 1991**						
5		*Real Flows*				Rs Billion	Output=1			Rs Billion	Output=1
6	1	CET Transformation (CETEQ)	1.00		**National Accounts**			3	**Fiscal Account**		
7	2	Supply of Goods (ARMG)	1.18	1	Output (Value Added)	324.69	1.00		Revenue	76.18	0.23
8	3	Domestic Demand (DEM)	1.18		Wages	163.32	0.50		NonTax	8.02	0.02
9	4	E/D Ratio (EDRAT)	0.49						Current Expenditure	83.76	0.26
10	5	M/D Ratio (MDRAT)	0.75		GDP at market prices	375.34	1.16		Goods & Services	35.58	0.11
11		*Nominal Flows*			Private Consumption	291.69	0.90		Interest Payments	22.07	0.07
12	6	Revenue Equation (TAXEQ)	0.20		Public Consumption	35.58	0.11		Transfers & Subsidies	26.10	0.08
13	7	Total Income Equation (INC)	1.13		Investment	86.38	0.27		Capital Expenditure	35.77	0.11
14	8	Savings Equation (SAV)	0.27		Exports	106.39	0.33		Fiscal Balance	-43.35	-0.13
15	9	Consumption Function (CONS)	0.83		Imports	144.70	0.45				
16		*Prices*									
17	10	Import Price Equation (PMEQ)	1.00		**Tax Revenue**			4	**Balance of Payments**		
18	11	Export Price Equation (PEEQ)	1.00	2	Sales & Excise Tax	32.03	0.10		Exports - Imports	-38.32	-0.12
19	12	Sales Price Equation (PTEQ)	1.08		Import Tariffs	18.62	0.06		Net Profits & Dividends	-0.78	0.00
20	13	Output Price Equation (PXEQ)	1.00		Export Duties	1.14	0.00		Interest Payments	-8.82	-0.03
21	14	Supply Price Equation (PQEQ)	1.00		Payroll Tax	0.00	0.00		Net Private Transfers	11.60	0.04
22	15	Numeraire (REQ)	1.00		Personal Income Tax	3.54	0.01		Net Official Transfers	7.90	0.02
23		*Equilibrium Conditions*			Capital Income Tax	12.84	0.04		Current Account Balance	-28.42	-0.09
24	16	Domestic Good Market (DEQ)	0.00		Total	68.16	0.21				
25	17	Composite Good Market (QEQ)	0.00						External Debt	260.50	0.80
26	18	Current Account Balance (CABAL)	0.08						Debt Service Payments	20.21	0.06
27	19	Government Budget (GBUD)	-0.01								
28											

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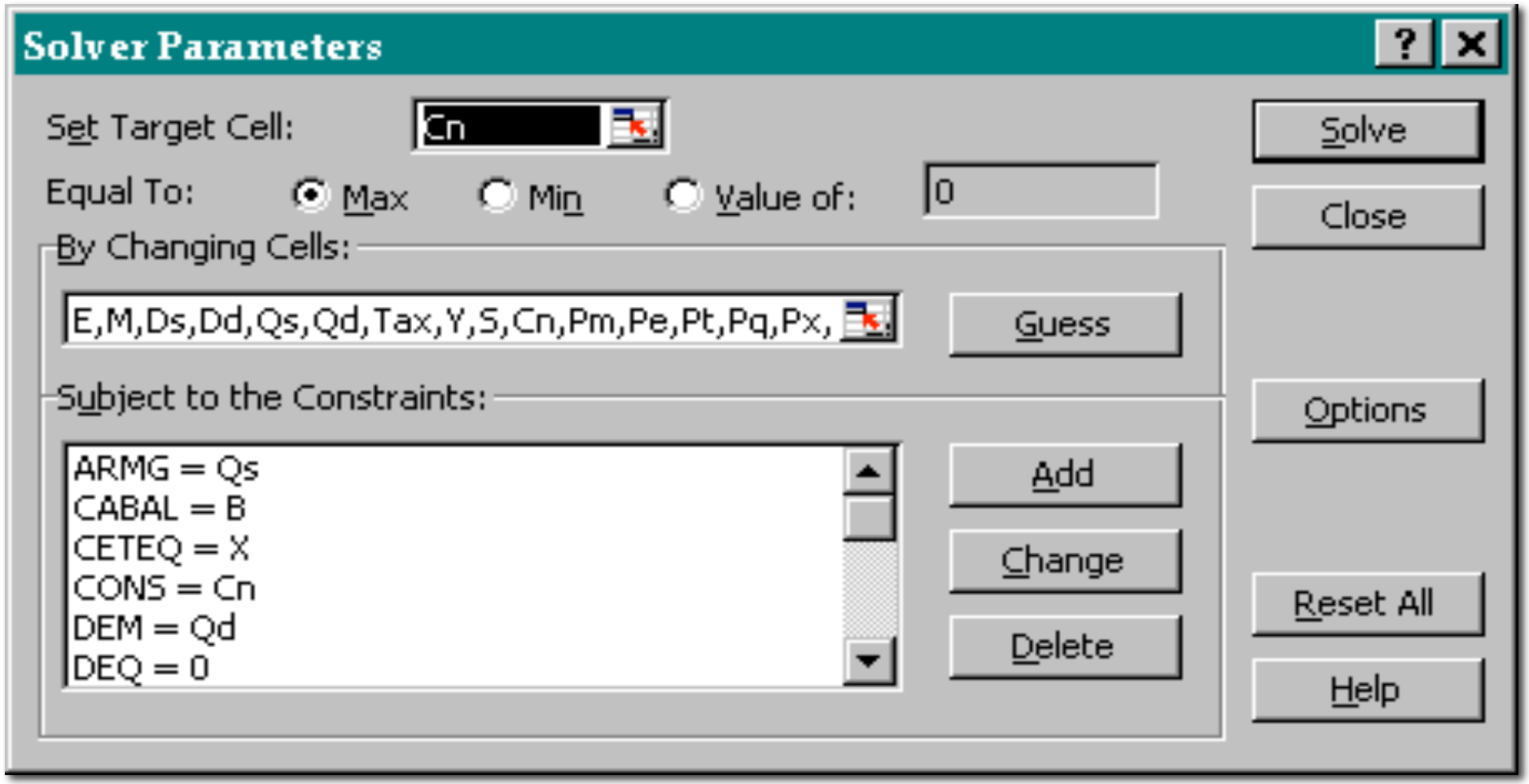
Variables are identified to the solver by name