Modeling the Impact of Postponed Implementation of EU Structural Funds: The Case of Slovakia

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Structure of presentation

- HERMIN model
- Allocation of NSRF
- Modeling delayed scenarios
- Macroeconomic impact of late implementation of allocation
- Reasons for low financial implementation
- Conclusions

Introduction

- National Strategic Reference Framework 2007-2013 (objective real convergence to EU 15)
- Total allocation (11,3 billion EUR)
- Modelling Effects
- Model Hermes – designed by EC (d´Alcantara and Italiener, 1982)
- Model Hermin – J. Bradley (1995)

Introduction to Hermin Model

- Econometrics Model
- Demand and Supply side
- 4 sectors (agriculture, manufacturing, market and non-market services)
- Production functions (C-D, CES)
- Yearly data since 2004 (simulation since 2007)

Supply side

- ***Manufacturing Sector (mainly tradable goods)***
- *Output = f1(World Demand, Domestic Demand, Competitiveness, t)*
- *Employment = f2(Output, Relative Factor Price Ratio, t)*
- *Investment = f3(Output, Relative Factor Price Ratio, t)*
- *Capital Stock = Investment + (1-δ) Capital Stock*$_{t-1}$
- *Output Price = f4(World Price * Exchange Rate, Unit Labour Costs)*
- *Wage Rate = f5(Output Price, Tax Wedge, Unemployment, Productivity)*
- *Competitiveness = National / World Output Prices*

Supply side

- ***Market Service Sector (mainly non-tradable)***
- *Output = f6(Domestic Demand,World Demand)*
- *Employment = f7(Output, Relative Factor Price Ratio, t)*
- *Investment = f8(Output, Relative Factor Price Ratio, t)*
- *Capital Stock = Investment + (1-δ)Capital Stock*$_{t-1}$
- *Output Price = Mark-Up On Unit Labour Costs*
- *Wage Inflation = Manufacturing SectorWage Inflation*
- *Agriculture and Non-Market Services: mainly exogenous and/or instrumental*
- ***Demographics and Labour Supply***
- *Population Growth = f9(Natural Growth, Migration)*
- *Labour Force = f10(Population, Labour Force Participation Rate)*
- *Unemployment = Labour Force – Total Employment*
- *Migration = f11(Relative expected wage)*

Demand (absorption) aspects

- *Consumption = f12(Personal Disposable Income)*
- *Domestic Demand = Private and Public Consumption + Investment + Stock changes*
- *Net Trade Surplus = Total Output - Domestic Demand*
- **Income distribution aspects**
- *Expenditure prices = f13(Output prices, Import prices, Indirect tax rates))*
- *Income = Total Output*
- *Personal Disposable Income = Income + Transfers - Direct Taxes*
- *Current Account = Net Trade Surplus + Net Factor Income From Abroad*
- *Public Sector Borrowing = Public Expenditure - Tax Rate * Tax Base*
- *Public Sector Debt = (1 + Interest Rate) Debtt-1 + Public Sector Borrowing*
- **Key Exogenous Variables**
- *External:* World output and prices; exchange rates; interest rates;
- *Domestic:* Public expenditure; tax rates.

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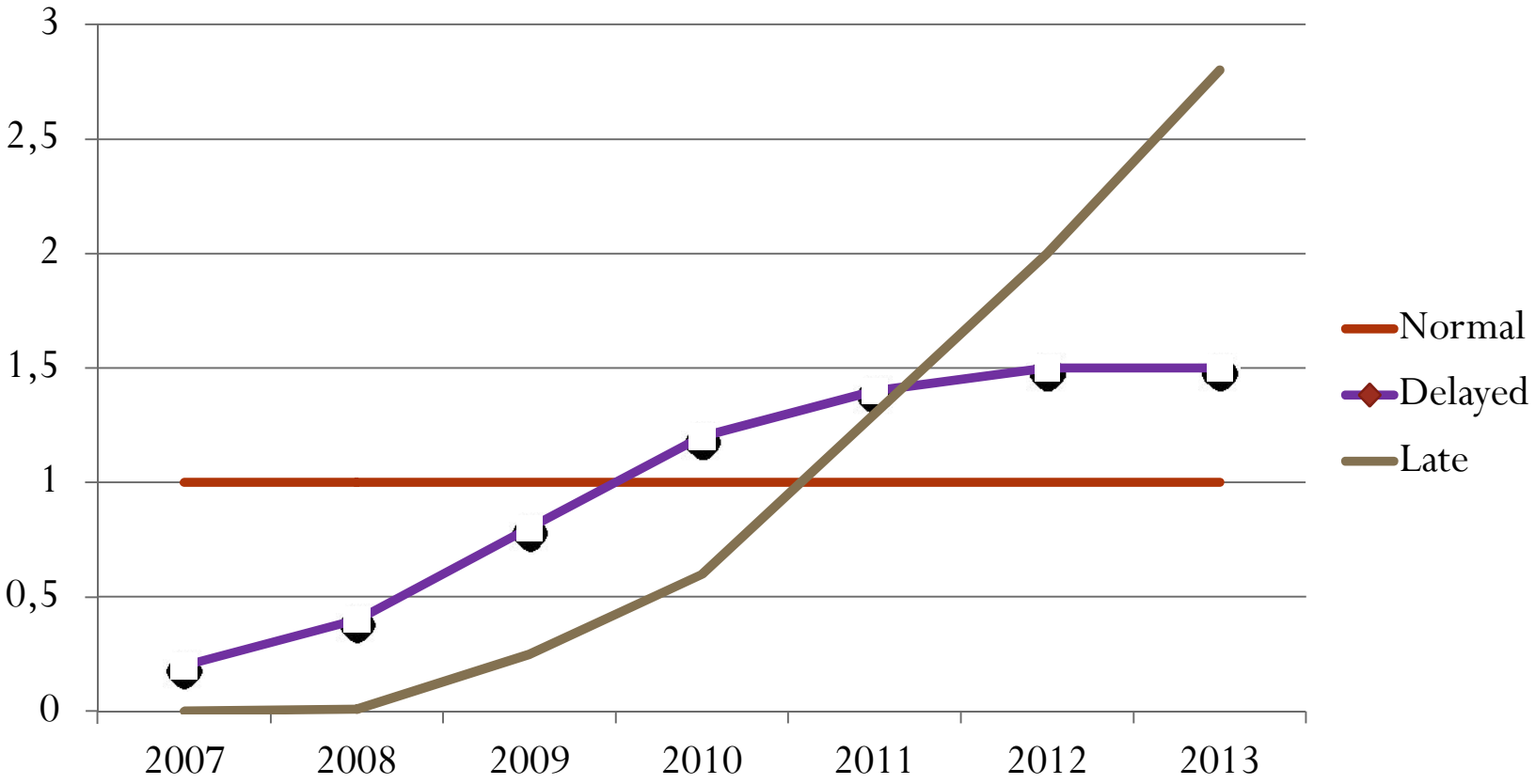
- Ex-ante evaluation of NSRF
- Several scenarios (MCaRD, authors (opt. scen.)
- 67 equations (18 stochastic, 49 identities incl. production functions)
- 87 variables, 67 endogenous, 20 exogenous
- First adaptation to Slovak conditions by Kvetan-Mlýnek-Radvanský (2006)

Financial allocation of NSRF in individual scenarios

Strategic priority (SP)	Specific priority (SP)	Fund	EU contribution		EU contribution	
			Scenario	Scenario	Scenario	Scenario
			MCaRD - SP	MCaRD - SP	Optimized	Optimized
Infrastructure and regional accessibility	Transport infrastructure	ERDF	14,10%	66,50%	11,50%	59,20%
		KF	17,80%		17,80%	
	Environmental infrastructure and protection	ERDF	0,20%		0,20%	
		KF	17,80%		17,80%	
	Local infrastructure	ERDF	16,60%		12,00%	
Innovation, informatisation and knowledge economy	Support of competitiveness of manufacturers and services	ERDF	6,00%	20,70%	6,00%	28,00%
	Informatisation of society	ERDF	4,00%		4,00%	
	Research and development	ERDF	8,00%		15,20%	
	Healthcare modernisation	ERDF	2,80%		2,80%	
Human resources and education	Modern education for knowledge economy	ESF	7,00%	12,00%	6,90%	12,00%
	Support of employment growth and social inclusion	ESF	5,00%		5,00%	
Technical assistance	Preparation, direction, monitoring… SF a KF	ERDF	0,40%	0,80%	0,40%	0,80%
	Financial management, controlling…	ERDF	0,40%		0,40%	

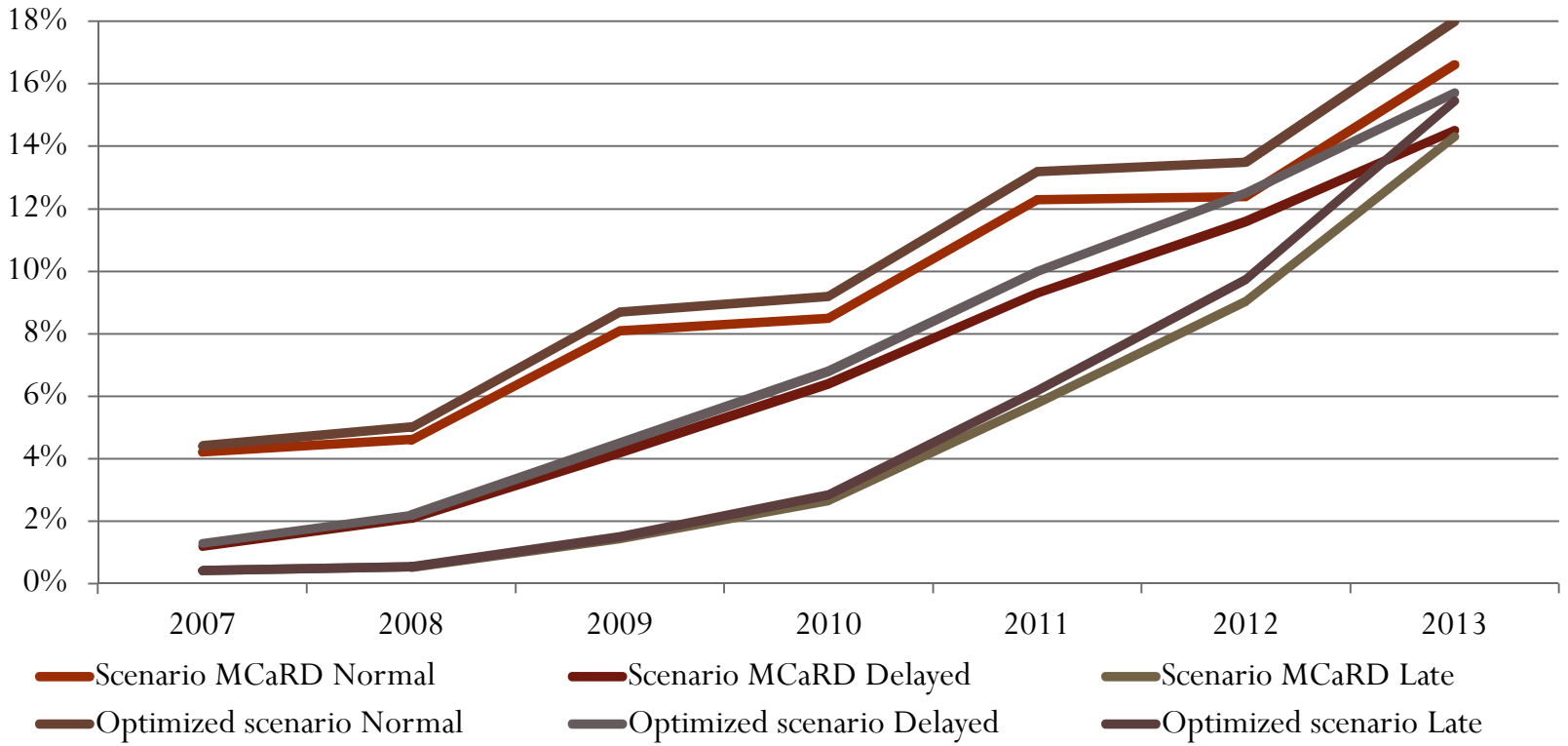
Share of NSRF financial allocation by particular scenarios with comparison to steady financing (NORM=1)



Changes in GDP growth rates in comparison to baseline scenario

	Total difference						Cumulative difference					
	Scenario MCaRD			Optimized scenario			Scenario MCaRD			Optimized scenario		
	Normal	Delayed	Late	Normal	Delayed	Late	Normal	Delayed	Late	Normal	Delayed	Late
2007	4,0%	1,3%	0,4%	4,3%	1,3%	0,4%	4,2%	1,2%	0,4%	4,4%	1,3%	0,4%
2008	0,4%	0,9%	0,1%	0,5%	0,9%	0,1%	4,6%	2,1%	0,5%	5,0%	2,2%	0,5%
2009	3,5%	2,2%	1,0%	3,7%	2,4%	1,0%	8,1%	4,2%	1,4%	8,7%	4,5%	1,5%
2010	0,4%	2,1%	1,3%	0,5%	2,3%	1,4%	8,5%	6,4%	2,7%	9,2%	6,8%	2,8%
2011	3,6%	2,8%	3,2%	3,9%	3,1%	3,4%	12,3%	9,3%	5,8%	13,2%	10,0%	6,2%
2012	0,1%	2,2%	3,2%	0,2%	2,4%	3,5%	12,4%	11,6%	9,0%	13,5%	12,5%	9,7%
2013	3,9%	2,7%	5,0%	4,1%	2,9%	5,4%	16,6%	14,5%	14,3%	18,0%	15,7%	15,4%

Development of cumulative GDP differences in comparison to baseline scenario (constant prices)



The catching-up in the implementation will gradually eliminate loss of additional GDP growth, although not completely, because of lower multiplication effects in the previous periods

Changes in employment rate at evaluated scenarios

	Total difference in Employment					
	Scenario MCaRD			Optimized scenario		
	Normal	Delayed	Late	Normal	Delayed	Late
2007	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
2008	1,3%	0,2%	0,0%	1,4%	0,3%	0,0%
2009	0,9%	0,4%	0,0%	1,0%	0,4%	0,1%
2010	2,2%	1,0%	0,2%	2,4%	1,0%	0,2%
2011	1,7%	1,4%	0,4%	1,9%	1,5%	0,4%
2012	3,1%	2,1%	1,2%	3,4%	2,3%	1,3%
2013	2,5%	2,5%	1,7%	2,7%	2,7%	1,9%

- Lower level of implementation in the beginning lower the positive impact of multiplication effects on the employment rate.
- High volume of financial resources used in the end of the programming period directly generate high growth of employment.

Changes in labour productivity

	Total difference						Cumulative difference					
	Scenario MCaRD			Optimized scenario			Scenario MCaRD			Optimized scenario		
	Normal	Delayed	Late	Normal	Delayed	Late	Normal	Delayed	Late	Normal	Delayed	Late
2007	4,1%	1,3%	0,4%	4,4%	1,3%	0,4%	4,2%	1,2%	0,4%	4,5%	1,3%	0,4%
2008	-1,2%	0,6%	0,1%	-1,2%	0,6%	0,1%	3,1%	1,8%	0,5%	3,3%	1,9%	0,5%
2009	3,9%	2,1%	1,0%	4,2%	2,2%	1,1%	7,0%	3,8%	1,5%	7,5%	4,0%	1,6%
2010	-1,2%	1,4%	1,0%	-1,2%	1,5%	1,0%	5,7%	5,2%	2,4%	6,2%	5,6%	2,6%
2011	4,3%	2,3%	2,9%	4,5%	2,5%	3,1%	10,1%	7,5%	5,3%	10,9%	8,1%	5,7%
2012	-1,5%	1,4%	2,3%	-1,5%	1,5%	2,5%	8,5%	9,0%	7,6%	9,3%	9,7%	8,1%
2013	4,7%	2,2%	4,4%	4,9%	2,4%	4,7%	13,5%	11,3%	12,1%	14,5%	12,2%	13,1%

Higher cumulative labour productivity in comparison to delayed scenario suggests, that higher spending in very late period will have significant influence to high grow of labour productivity, which is questionable and differs with intuition.

Values of CSF multiplier in various scenarios

	Share of CSF on GDP						Cumulative CSF multiplier					
	Scenario MCaRD			Optimized scenario			Scenario MCaRD			Optimized scenario		
	Normal	Delayed	Late	Normal	Delayed	Late	Normal	Delayed	Late	Normal	Delayed	Late
2007	6,9%	1,3%	0,0%	6,6%	1,3%	0,0%	0,60	0,92	NA	0,67	0,96	NA
2008	6,4%	2,4%	0,0%	6,1%	2,4%	0,0%	0,66	0,87	NA	0,74	0,92	NA
2009	5,8%	4,5%	1,2%	5,8%	4,5%	1,2%	0,88	0,91	1,92	0,97	0,97	1,99
2010	5,6%	6,3%	2,7%	5,5%	6,2%	2,7%	1,02	0,96	1,29	1,13	1,02	1,36
2011	5,2%	6,8%	5,3%	5,3%	6,8%	5,3%	1,26	1,09	1,17	1,38	1,17	1,24
2012	4,9%	6,9%	7,6%	5,1%	6,8%	7,6%	1,44	1,23	1,17	1,57	1,33	1,26
2013	4,6%	6,4%	9,8%	4,9%	6,4%	9,8%	1,69	1,42	1,28	1,83	1,54	1,38

For general evaluation of respective scenarios in the framework of the HERMIN model, the CSF multiplier is widely used. It quantifies the cumulative growth of GDP compared with the baseline scenario i.e. the cumulative value of expenditures of the NSRF as a share on GDP.

Delays ? Internal factors

- Parallel implementation of two programming periods (2004 – 2006 and 2007 – 2013) and preparation for 2014 – 2020
- Delays in preparation of the NSRF and adoption of OPs
- Low absorption capacity on the side of demand as well as supply
- Lack of efficient administrative capacities on national and regional level and on the side of managing authorities and applicants. High fluctuation of civil servants.
- Lack of experience with European projects on the side of applicants.
- Insufficient domestic financial resources available for co-financing on national as well as regional level
- Rent – seeking behaviour, lack of transparency
- Competences struggles between relevant national institutions
- Bureaucracy

External factors

- Financial and economic crisis
  - Deterioration of budgetary balances
  - Lack of financial resources on the side of applicants for co-financing
- Administrative burden imposed by the Cohesion policy related regulations
- Changes in the rules on financial control

Conclusions

- Delays in implementation will in the future impose a great pressure on the expenditure related to co-financing
- Delays in the implementation in the first years can lower the effects in the economy
- Financial implementation in the last years can results in loss of financial resources in the case the n+2 rule will apply.
- High level of spending in the last year can also lead to inefficient allocation and impose pressure on existing capacities (financial, administrative).