

Il fondo sviluppo e coesione e le infrastrutture dei trasporti

mercoledì 15 ottobre 2014

**Project financing and public private partnership
nel settore dei trasporti e delle infrastrutture**

**massimo lo cicero
Sapienza & Suor Orsola Benincasa**

in collaborazione con



Sala Multimediale Regione Piemonte
C.so Regina Margherita, 174 - Torino



rischio ed incertezza

un approccio tradizionale

Probabilità computabile	Esiste	Non esiste
Esito catastrofico		
Esiste	<i>Credito</i> <i>Mercati mobiliari</i> <i>Assicurazioni</i>	<i>Incertezza</i> <i>effettiva</i>
Non esiste	<i>Le lotterie</i>	<i>La vita</i>

*Il nuovo paradigma
originare rischi per distribuirli*

*l'effetto dei derivati
la scoperta della ingegneria finanziaria
la globalizzazione del mercato finanziario
grazie alle tecnologie della comunicazione e della
informazione*

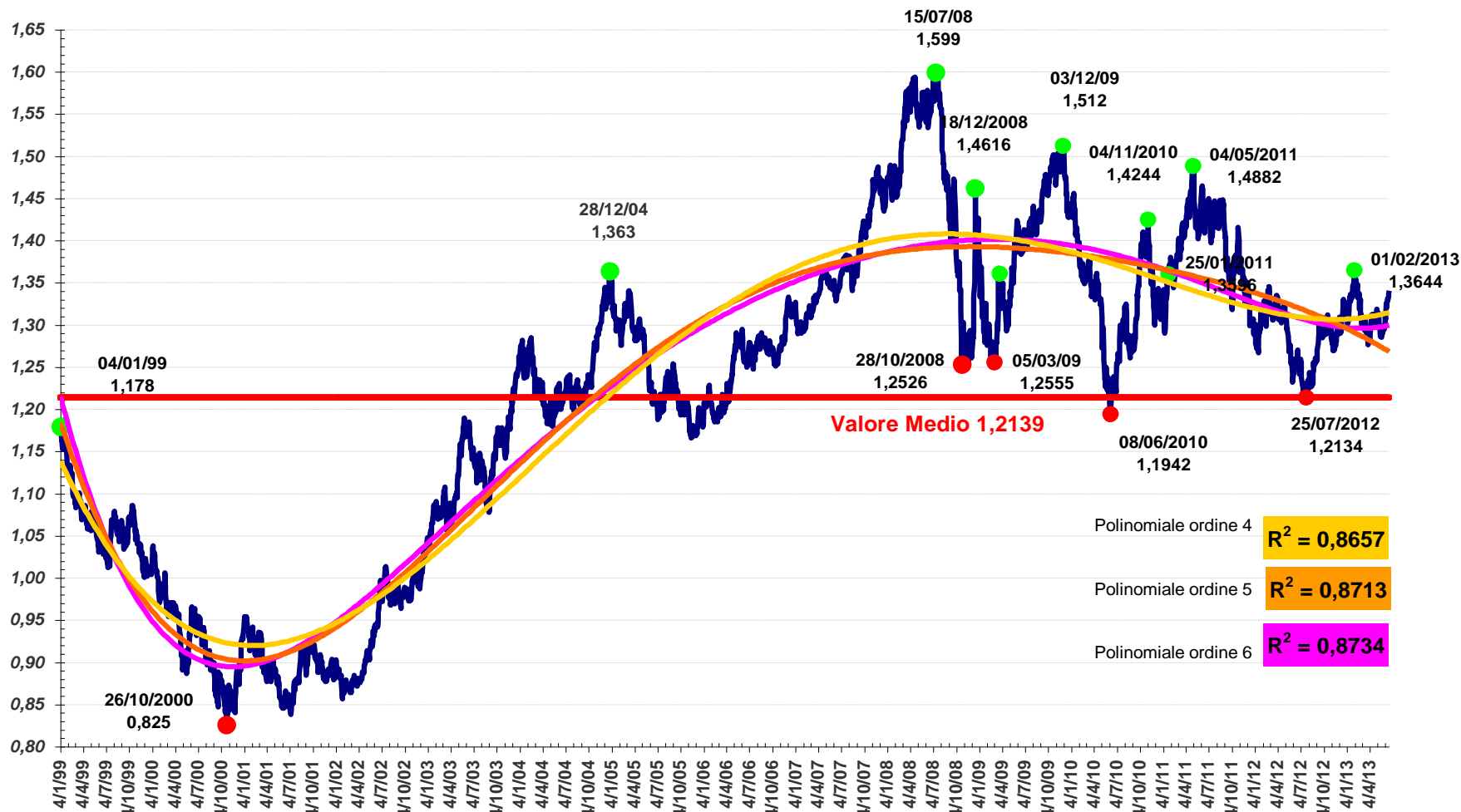
*Samuelson ha scritto che i suoi allievi
Merton Sholes e Black
erano i Newton della finanza perchè
avevano inventato una nuova scienza
autonoma dall'economia*

***Il terzo millennio
euro e finanza innovativa***

Il ciclo lungo del cambio tra euro e dollaro

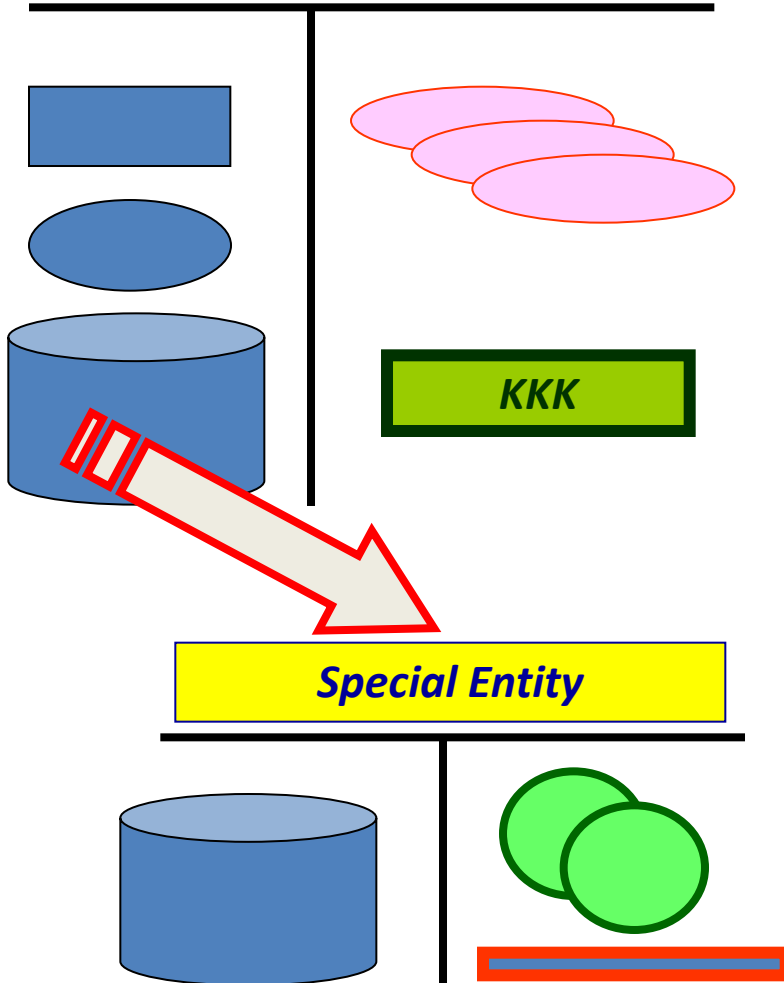
Valore Medio: 1,213877 - Valore Minimo: 0.8252 in data: 26/10/2000 - Valore Massimo: 1.599 in data: 15/07/2008

Quotazioni Dollaro USA in Euro dal 04/01/1999 al 19/06/2013

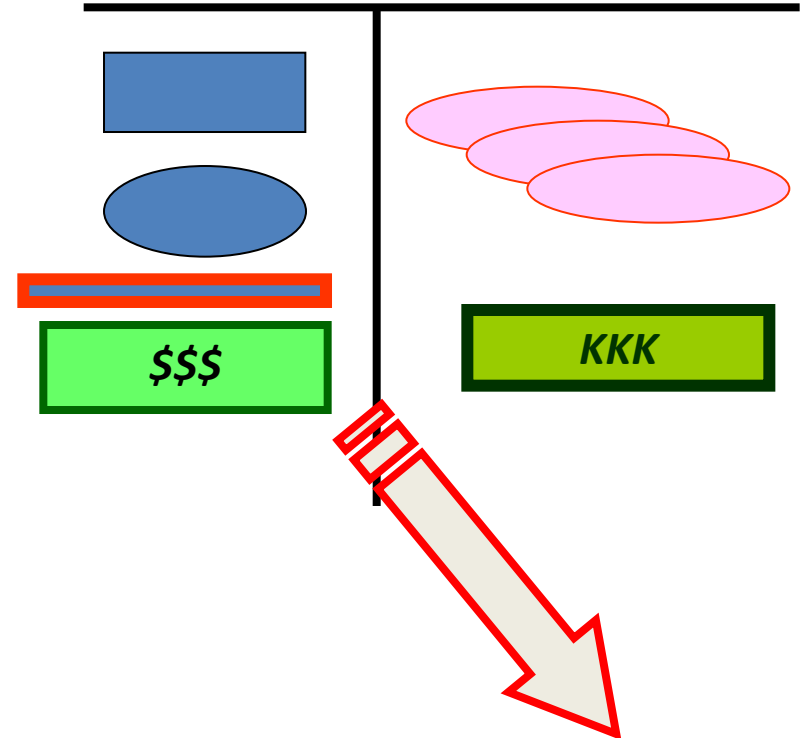


Originate and Hold vs. Originate to Distribute

O & H

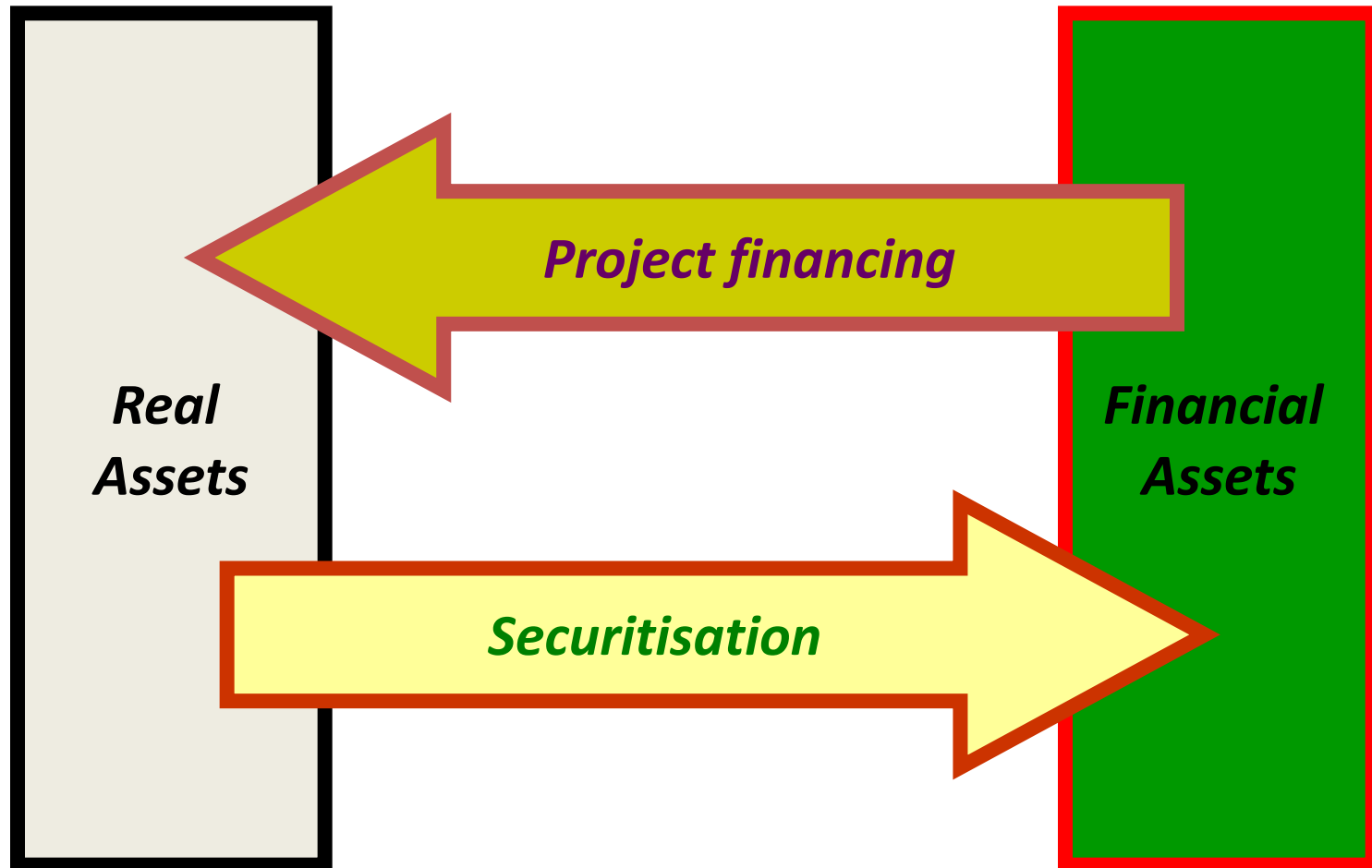


O t D

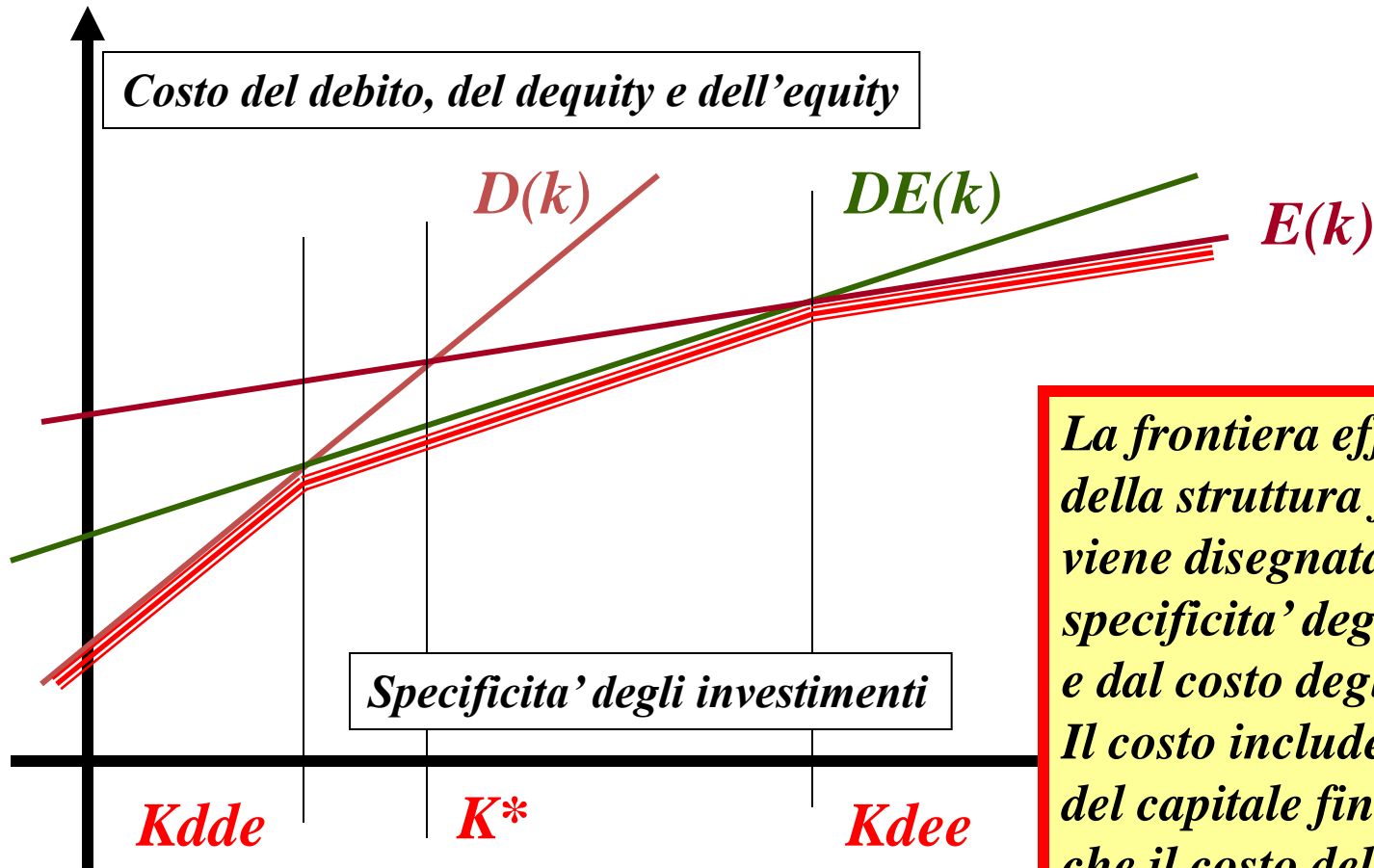


- ✓ *Riduco la dimensione patrimoniale*
- ✓ *Allargo il controllo su altre banche*

Special Purpose Vehicles & Special Entities
le applicazioni operative della ingegneria finanziaria



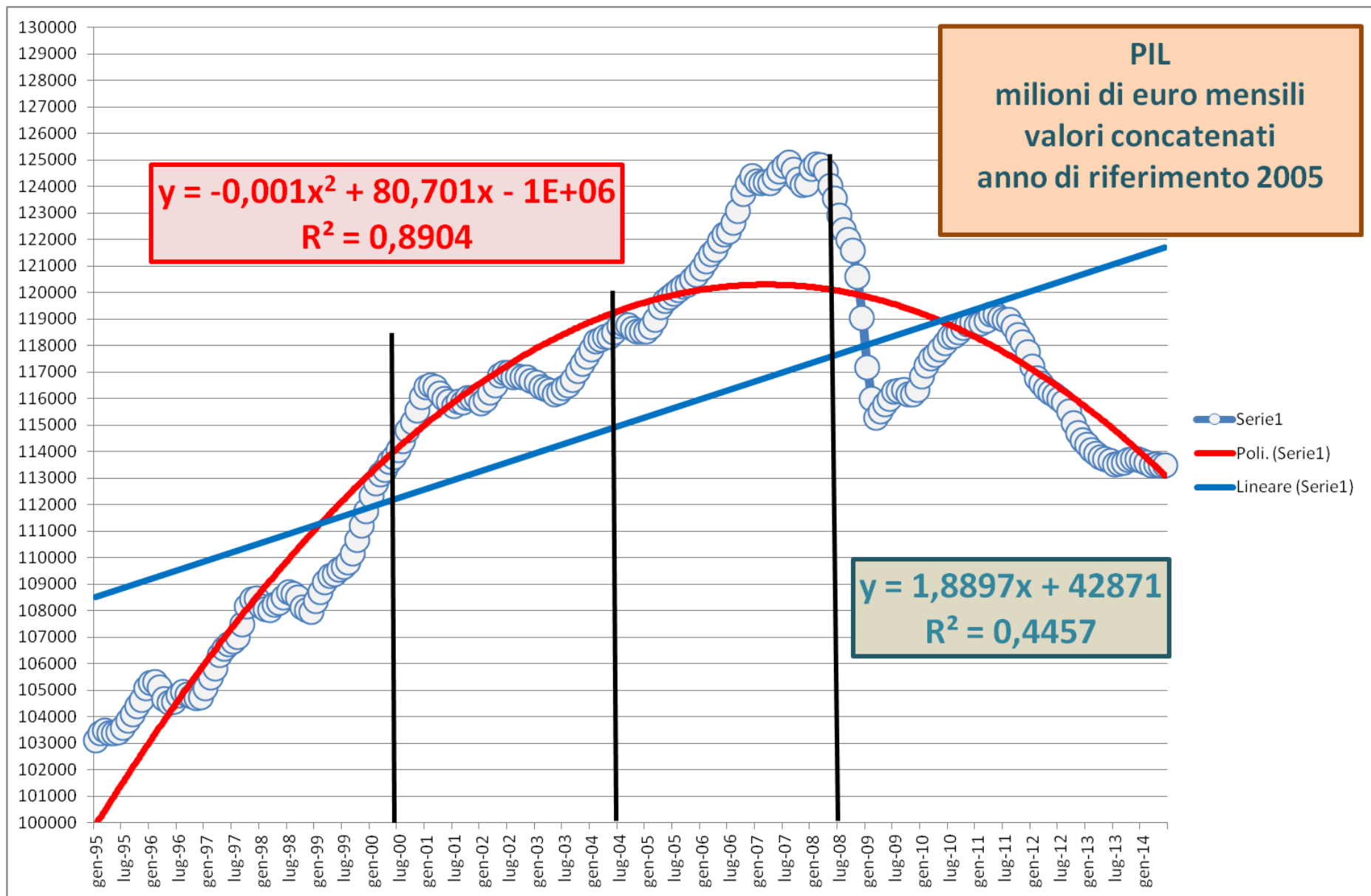
***Specificita' degli investimenti e struttura finanziaria
debito, quasi equity (dequity) ed equity***



*La frontiera efficiente
della struttura finanziaria
viene disegnata dalla
specificita' degli investimenti
e dal costo degli stessi
Il costo include sia il prezzo
del capitale finanziario
che il costo della relativa
struttura di governo*

La sequenza della strategia di mario draghi

- **A consistent strategy for a sustained recovery** Lecture by Mario Draghi, President of the ECB, at Sciences Po, Paris, 25 March 2014
- **WORLD ECONOMIC AND FINANCIAL SURVEYS** World Economic Outlook (WEO), **Recovery Strengthens, Remains Uneven**, April 2014
- **Introductory statement to the press conference (with Q&A)**, Mario Draghi, President of the ECB, Frankfurt am Main, 5 June 2014 (we decided to lower the interest rate on the main refinancing operations of the Eurosystem by 10 basis points to 0.15% and the rate on the marginal lending facility by 35 basis points to 0.40%. The rate on the deposit facility was lowered by 10 basis points to -0.10%.)
- **WORLD ECONOMIC OUTLOOK (WEO) UPDATE**, **An Uneven Global Recovery Continues**, July 2014
- **Unemployment in the euro area**, Speech by Mario Draghi, President of the ECB, Annual central bank symposium in Jackson Hole, 22 August 2014
- **Introductory statement to the press conference (with Q&A)**, Mario Draghi, President of the ECB, Frankfurt am Main, 4 September 2014 (Based on our regular economic and monetary analyses, the Governing Council decided today to lower the interest rate on the main refinancing operations of the Eurosystem by 10 basis points to 0.05% and the rate on the marginal lending facility by 10 basis points to 0.30%. The rate on the deposit facility was lowered by 10 basis points to -0.20%. In addition, the Governing Council decided to start purchasing non-financial private sector assets. The Eurosystem will purchase a broad portfolio of simple and transparent asset-backed securities (ABSs) with underlying assets consisting of claims against the euro area non-financial private sector under an ABS purchase programme (ABSPP)



None of these structural reforms is easy. Peer pressure could help. Rather than being fixated on harsher budget-deficit rules, the European Union's members should pledge to complete the single market in services, to open up cosy national markets to greater competition. The members of the G20 big economies could commit themselves to specific structural goals, from raising retirement ages to deregulating things like transport. A bold microeconomic agenda will not yield instant rewards. Nor is it a substitute for getting the macroeconomics right. But without it global growth will eventually falter.

The world economy

The quest for growth

***It may depend on structural reforms as much
as prudent macroeconomic policy***

Oct 7th 2010



Project Financing & Public Private Partnership

Perche' alcuni beni sono pubblici?
beni pubblici, risorse comuni e beni privati ("merci")

<u>Rivalita' nel consumo</u> <u>Esclusione dall'accesso</u>	<i>Esiste</i>	<i>Non esiste</i>
<i>Esiste</i>	<u>Beni privati</u> Coni gelato Automobili Autostrade congestionate	<u>Monopoli "naturali"</u> TV via cavo La rete elettrica Autostrade scorrevoli
<i>Non esiste</i>	<u>Risorse naturali</u> Il pesce del mediterraneo L'ambiente Strade congestionate	<u>Beni pubblici</u> Difesa nazionale La conoscenza Strade scorrevoli

Ecco come opinerei di poter supplire a questa deficienza.

Crederei di dovere per le strade ferrate ricorrere ancora al credito estero; e per ciò che riflette al saldo delle spese interne, di ricorrere al credito interno.

Un paese, le cui finanze sono meglio ordinate delle nostre, essendo entrato nella via delle spese straordinarie, trovasi nella necessità di ricorrere ogni anno al credito; il Belgio quasi ogni anno vi ricorre per far progredire il sistema dei lavori pubblici che ha intrapreso, il quale consiste non solo in reti di strade ferrate ma anche in opere di canalizzazione, di dissodamento di terreni incolti ed in altre opere immense di pubblica utilità.

Io non dico che il Governo debba o non debba proseguire in questa via.

Se fosse possibile di svolgere l'industria privata, al punto che essa si potesse incaricare delle grandi opere pubbliche che si farebbero nello Stato, darei di buon grado la preferenza a questo sistema; ma ove questo spirito pubblico non si svolgesse, e non si svolgesse in modo tale da compiere da sé solo le opere di pubblica utilità imperiosamente richieste, crederei che, piuttosto che non farle, sarebbe sempre meglio se venissero eseguite dal Governo col mezzo di prestiti.

Camillo Benso, Conte di Cavour

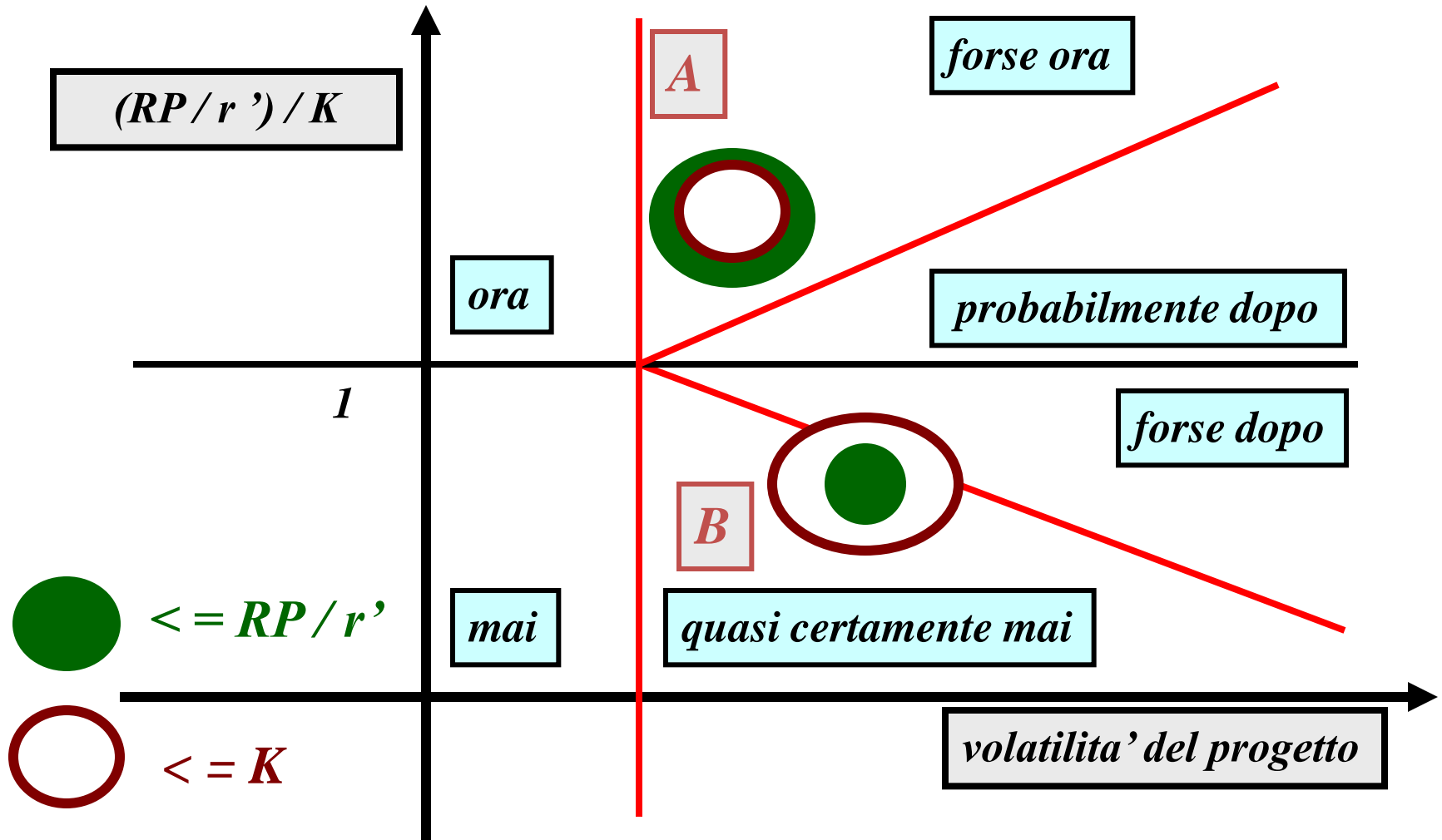
Discorso tenuto alla Camera il 16 giugno 1851.

Ora in Camillo Benso di Cavour, *La libertà come fine, antologia di scritti e discorsi*, a cura di Roberto Balzani, Ideazione Editrice, Roma 2002.

Le infrastrutture e la finanza di progetto

- *Trasporti e telecomunicazioni sono lo scheletro della civiltà degli scambi. Essi rappresentano la base materiale dello sviluppo ma anche il lievito per la produzione di beni strumentali e servizi, capaci di alimentare lo sviluppo.*
 - *Richiedono soluzioni tecnologiche per produrre l'energia necessaria per le infrastrutture stesse e per le imprese, generate dalla loro creazione. Ma le infrastrutture, e gli oggetti che le percorrono, per tutti valga la metafora del carro sulla strada, sono una coppia singolare.*
 - *Beni semipubblici le prime - o "monopoli naturali" - e beni privati i mezzi di trasporto, i software e le attrezzature che si utilizzano per comunicare.*
- *Logico che una simile coppia, vincolata nella reciprocità quanto diversa nella rispettiva identità delle parti, sia destinata ad essere realizzata conciliando intervento pubblico e comportamenti di mercato*
 - *Stato, banche ed imprese private devono sperimentare forme di condivisione del rischio: dalla finanza di progetto, alla determinazione di tariffe di accesso, che tutelano i deboli, alla fiscalità generale.*
 - *Perché si deve comunque pagare la differenza tra quello che si spende e quello che si può ricavare dai prezzi di accesso imposti agli utenti, dalle tariffe o dalle tasse.*
 - *Evidentemente si può collocare l'onere fiscale anche sulle generazioni future: in questo caso le opere sono finanziate anche dal debito pubblico, che è una imposta differita*

La strategia come portafoglio di opzioni



PUBLIC-PRIVATE PARTNERSHIPS FOR TRANSPORTATION

A TOOLKIT FOR LEGISLATORS

By

Jaime Rall

James B. Reed

Nicholas J. Farber

At the direction of the

NCSL Partners Project on Public-Private Partnerships (PPPs) for Transportation



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William T. Pound
Executive Director

7700 East First Place
Denver, Colorado 80230
(303) 364-7700

444 North Capitol Street, N.W., Suite 515
Washington, D.C. 20001
(202) 624-5400

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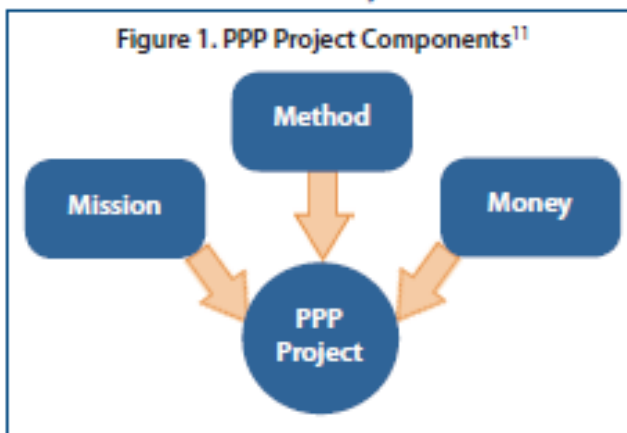
The Range of PPP Approaches: The Mission, the Method and the Money

Long-term leases of existing transportation assets have tended to dominate the PPP discourse in the United States, largely due to the highly publicized and controversial leases of the Chicago Skyway and the Indiana Toll Road. Although some policymakers have come to associate PPPs with this type of project, in fact, a wide range of possible PPP projects exists. PPP projects differ based on 1) the “mission,” or the kind of facility or public service that is the focus of the project; 2) the “method,” or the project delivery model; and 3) the “money,” or the source of financing (Figure 1).¹⁰

The Mission: PPP Assets and Services

The first key characteristic of a PPP project is its mission. This includes public sector goals and objectives for the project—focused on its intended results and public benefit—and, following from that, the kind of facility and public service to be provided. These policy decisions then will determine whether a PPP is appropriate or feasible and, if so, the project delivery structure and financing tools to be considered.

Figure 1. PPP Project Components¹¹



October 2010

Public Private Partnerships in Transport:

Trends & Theory

P3T3

2013 Discussion Papers

Part I Country Profiles

Edited by K. Verhoest, N. Carbonara, V. Lember, O.H. Petersen, W.

Scherrer and M. van den Hurk

Year of publication: 2013

ISBN: 978-88-97781-60-8

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Scherrer and M. van den Hurk

- **2.5 Effects of financial crisis on PPPs**

The financial crisis has not explicitly have had any significant impact on the view of PPP. If any, the financial crisis has reinforced the current view of fiscal stringency. Furthermore, since there is no PPP policy in general or in sectors, there have not been any policy changes. **The effect of the financial crisis has affected national finances negatively. This impact on the economy, together with the policy of fiscal stringency, has postponed some transport infrastructure projects, mainly rail and road projects, due to lack of funding.** No tendency can be seen regarding the impact of the financial crisis upon regional or local levels either.

IMF Joint Caribbean Growth Conference
Public Private Partnerships (PPPs)
September 2013 NASSAU, BAHAMAS



- PPPs can help address the infrastructure gap by mobilizing private sector investment and expertise
- **Successful PPPs can:**
- **have a net positive fiscal impact** - reducing government expenditures and increasing fiscal receipts
- **improve competitiveness**, thereby creating an environment conducive to private sector investments into growth sectors
- **help make progress on inclusion** by broadening access to basic services (energy, water, transport, health and education)
- **More specifically:**
- PPPs facilitate delivery of improved infrastructure
- PPPs, focused on performance based delivery of infrastructure and services, not just financing, transfer risk to the private sector
- **PPPs are not a panacea for all infrastructure development (e.g. does not address regulatory issues) but are critical in leveraging private sector resources**

Valuing public-private partnership (PPP) risk: a scenario analysis

Manos Sfakianakis ^{a, b}

^a Maastricht Graduate School of Governance, Maastricht University, the Netherlands

^b Foundation for Research and Technology – Hellas (FORTH), General Secretariat for
Research and Technology, Greece

phone numbers: +306944635513, +302810391306

emails: manos.sfakianakis@maastrichtuniversity.nl, sfakm@iesl.forth.gr

Abstract

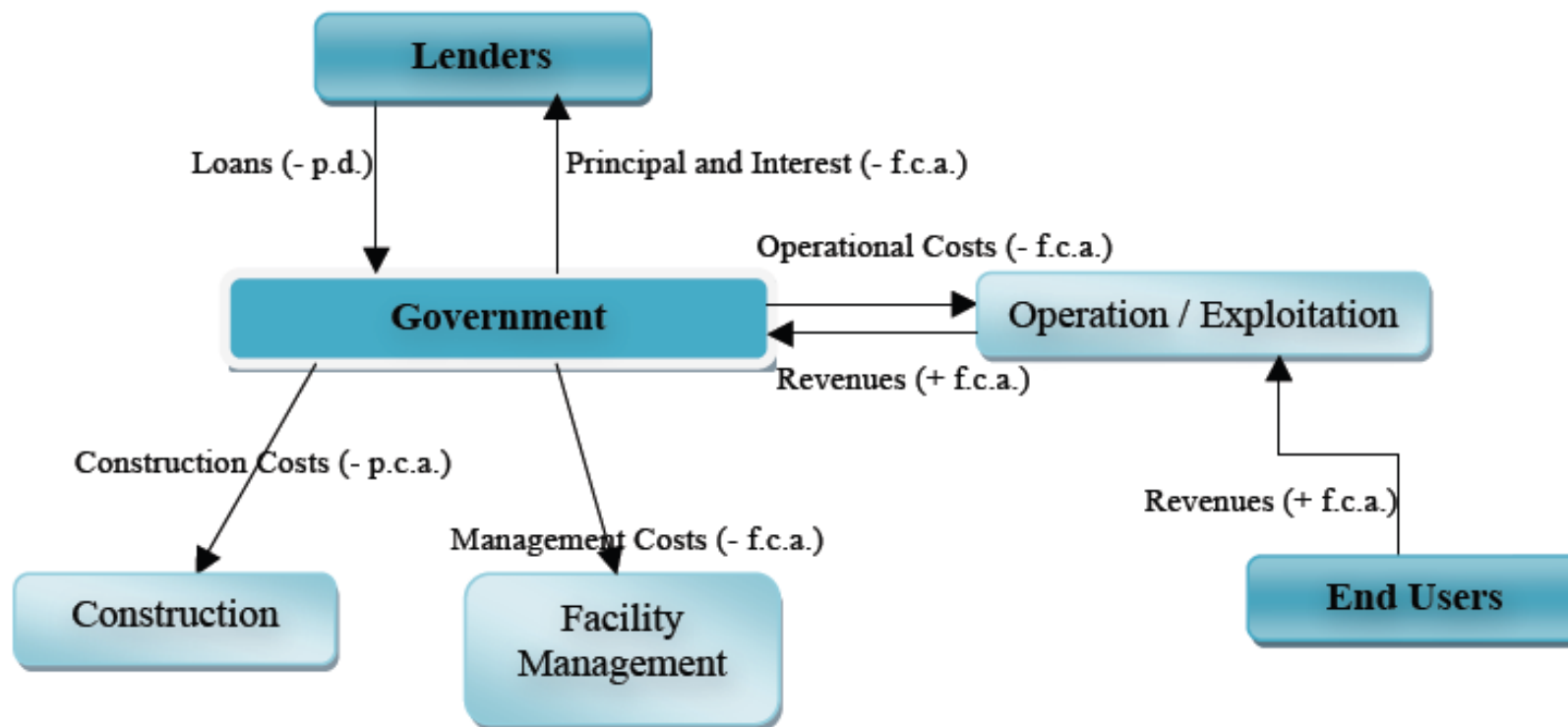
PPPs can impose important future cost on the government, similar to public debt obligations for financing infrastructure investment. Apart from that, government guarantees, typical in PPP contracts, constitute explicit contingent liabilities. In this study, we show that the notion of a PPP as a (set of) contingent claim(s) can also be used to value the PPP risk. We introduce four different scenarios that were at the Chilean government's disposal for executing a transport infrastructure project and analyse the actual and contingent cash flows. We find that there is a positive fiscal impact for the PPP case during the initial years (because the investment cost burdens the private actor) and a negative impact for the years to follow (because of principal and interest payments and foregone revenues). Also, the net contingent PPP flows constitute the real effect on the deficit and correspondingly on the public debt and weaken the government's fiscal stance. Finally, we attribute a specific price to the public PPP risk introducing CDS valuation with and without counterparty (government) default.

Keywords: government guarantees, net contingent flows, CDS valuation

4.1 Scenario A: Typical public investment / self-finance

Scenario A assumes that the PPP project is *de facto* realized by the government without the participation of the private partner. In Figure 1, we develop a flow chart with all the cash inflows and outflows that follow a public investment project, the three basic actors (lenders, government and project's end users) and the major procedures (operation / exploitation, construction and facility management). We can observe the positive and negative effects of self-financing an infrastructure project to public debt and the fiscal accounts (capital and current account).

Figure 1: Positive and negative effects in public accounts for Scenario A: Typical Public Investment / Self Finance

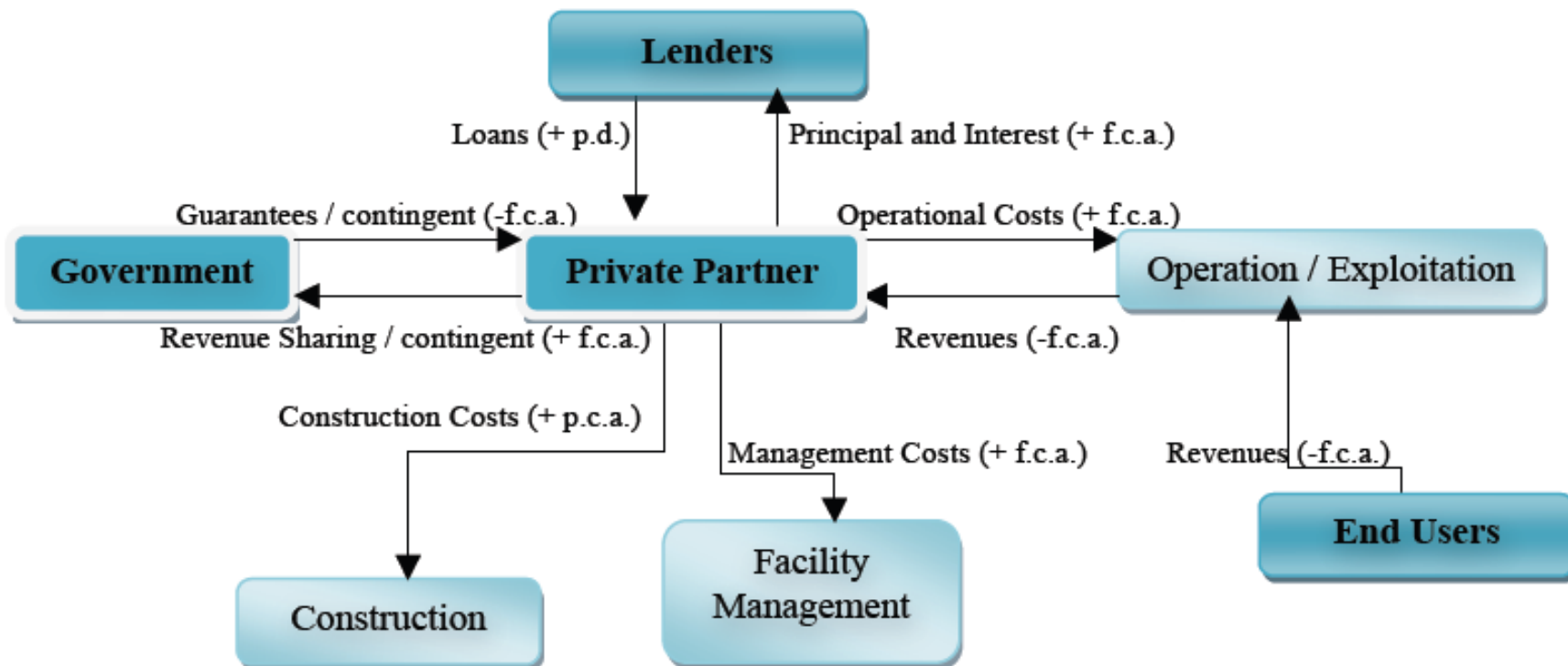


Note: p.d.: public debt, f.c.a.: future current account, p.c.a.: present capital account, +: positive effect, -: negative effect.

Source: Author's contribution.

We develop Figure 2, which shows the positive and negative effects on public debt and the fiscal balances, considering a PPP scenario vis-à-vis typical public investment. The new actor that is added in this flowchart compared to Figure 1, is the private partner who now borrows to design, construct and finance the project. The private partner undertakes the loans and is responsible for amortization and interest payments. At the same time it reimburses the income of the project in the form of revenue inflows via the road exploitation and bears the construction and facility management costs. Lastly, we introduce two new contingent flows for the government, the guarantees with a negative effect on the future current account and the revenue sharing flows with a positive effect on the future current account. Both of them are contingent since they depend on specific events to occur.

Figure 2: Positive and negative effects in public accounts for Scenario B: PPP



Note: p.d.: public debt, f.c.a.: future current account, p.c.a.: present capital account, +: positive effect, -: negative effect.

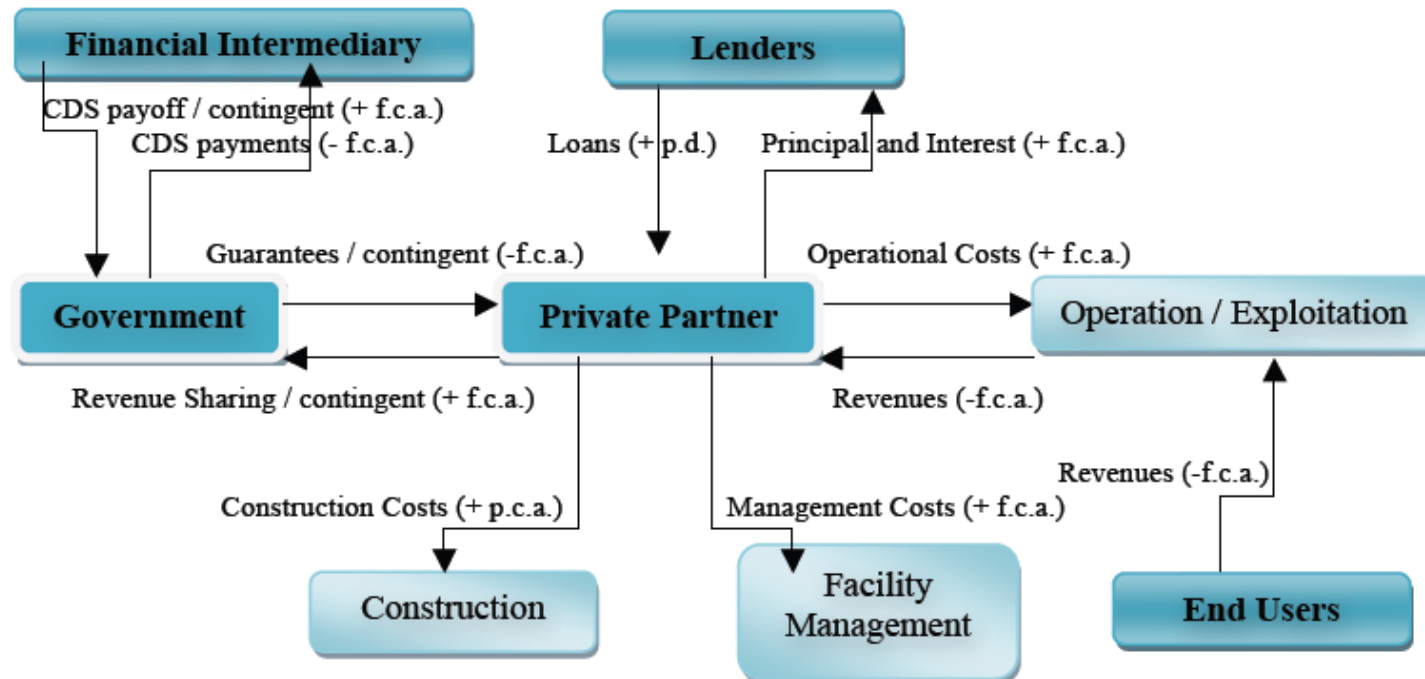
Source: Author's contribution.

4.3 Scenario C: public-private partnership with credit default swap / no counterparty default risk

The valuation of the contingencies in the form of PPP guarantees is achieved using derivatives valuation techniques and more specifically the credit default swap (CDS) valuation (Hull, 2006). This scenario assesses the price of the guarantee without considering counterparty risk. If the toll revenue falls behind the specific threshold that is foreseen in the PPP contract, then the government will have to activate the guarantee. However, it can buy protection against this possibility of default, by insuring via a CDS, the contingent amount that it will reimburse the private partner.³

The present scenario (and also scenario D) with the credit default swap and the effects of PPP flows on the debt and on the fiscal balances is shown in Figure 3.

**Figure 3: Positive and negative effects in public accounts for Scenarios C and D:
Public-Private Partnership with credit default swap**



Note: p.d.: public debt, f.c.a.: future current account, p.c.a.: present capital account, +: positive effect, -: negative effect.

Source: Author's contribution.

Compared to the previous scenario of the plain PPP arrangement, most of the cash flows and the basic actors are the same. The four actors are the government, the private partner, the lenders and the end users, while the flows of payments concerning loans, construction and maintenance costs, revenues and the contingent flows (guarantees and the revenue sharing scheme) have the same direction. We introduce a new basic actor who issues the CDS. There are two flows between this intermediary and the government: a cash outflow (periodic payment) from the government⁴ and a

contingent cash inflow (the payoff) towards the government in the case of the private partner default.

After calculating the default and survival probabilities (Standard & Poor's, 2009a), we compute the CDS spread through the present values of the expected payments and the expected payoffs.⁵ Then, the value of the credit default swap is the present value of the expected payoff minus the present value of the CDS payments made by the government. The expected payments will be the total of the discounted annual values of the probability of survival times the rate at which payments are made per year. To this amount, we must add the sum of the final accrual payments which are again calculated via default probabilities. These two amounts constitute the total present value of the expected payments of the swap. Finally, the present value of the payoff is the discounted value of the probability of default times $1 - R$ (where R is the recovery rate) for each year of the contract. In this way, we obtain the CDS spread for the government insurance against the possibility of default by the private partner.

Riferimenti bibliografici

- ***John Hull, traduzione di Emilio Barone, Opzioni, futures e altri derivati, Pearson Italia S.p.a., 2006***
- ***Ian Greenspan, Risk and Uncertainty in Monetary Policy, At the meeting of the American Economic Association, San Diego, California, January 3, 2004 at <http://www.bis.org/review/review.htm>***
- ***Ricardo Hausmann and Dani Rodrik, Doomed To Choose: Industrial Policy As Predicament, Harvard University, John F. Kennedy School of Government 9 Kennedy Street Cambridge, MA 02138, Draft, September 2, 2006***
- ***Massimo Lo Cicero, Impresa, Incertezza e Investimenti, Dal Corporate al Project Financing, UTET Libreria, Torino 2003***
- ***Robert Merton and Zvi Bodie, Finance, Prentice Hall, Upper Saddle River, New Jersey 2000***
- ***Schwartz and Trigeorgis, (edited by) Real Options and Investment under Uncertainty: Classical Readings and Recent Contributions, The MIT Press, Cambridge Massachusetts and London, 2001***
- ***Smit & Trigeorgis, Strategic Investments, Real Options and Games, Princeton University Press, Cambridge and Oxford, 2004***
- ***Eugene F. Fama and Kenneth R. French, The Capital Asset Price Model: Theory and Evidence, in Journal of Economic Perspectives, Summer 2004***
- ***Paolo Savona, Politica Economica e New Economy, McGraw-Hill, 2002***
- ***Cesare Imbriani ed Antonio Lopes, Mercati, Istituzioni Finanziarie e Politiche, Utet 2013***

Grazie

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