

Market dislocations

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What are financial market dislocations?

Reflection

| What do you associate with financial market dislocations?

What are financial market dislocations?

„Financial market dislocations are elusive to define, and difficult to measure.“

(Pasquariello (2014): Financial Markt Dislocations, The Review of Financial Studies, Volume 27, Issue 6, pg.1869)

Motivation

- | Financial market dislocations can have a negative influence on the financial system and the overall global economic development.
- | They pose a threat to financial stability and price stability.
- | Market dislocations are however, elusive to define and difficult to measure.
- | This presentations gives one possible definition for financial market dislocations, linked with case studies for certain market segments (stock market, interbank and foreign exchange market and sovereign bond market).
- | It will also try to identify measures to limit the negative influence of financial market disloctaions on the financial market and the global economy.
- | Further it gives an example for a financial market failure which ist not based on the defintion of market dislocations which is used here.

Agenda

- I. Defining financial market dislocations
- II. Asset price bubbles in the stock market
- III. Persistent deviation from interest rate parity
- IV. The European sovereign debt market
- V. Financial market failure not based on a dislocation
- VI. Summary

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Defining financial market dislocations

I One possible definition:

„Financial **market dislocations** are circumstances in which **financial markets**, operating under stressful conditions, **cease to price assets correctly** in an absolute and relative basis.“

(Pasquariello (2014): Financial Market Dislocations)

I The assessment of absolute mispricing is subject to considerable debate and significant conceptual and empirical challenges.

I According to this definition we will consider three examples:

1. Asset price bubbles in the stock market
2. Persistent deviations from covered interest rate parity
3. The European sovereign bond market

Defining financial market dislocations

Pricing in financial markets

I In functioning financial markets capital demand and supply is balanced.

I In the theory of efficient markets:

- Prices of all financial instruments reflect **all available information**.
- As a result markets adjust immediately and continuously to **changes in fundamental values**.
- (No one can consistently beat the market average).

I Financial markets are not necessarily efficient.

I In a non-efficient financial market prices are typically determined by two components:

- 1) A **fundamental** component reflecting **real-world economic** conditions
- 2) A **speculative** component essentially consisting of **market expectations** on the future evolution of the price itself

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Asset price bubbles in the stock market

Definition of stock market bubbles (empirical)

| Empirical Definition of stock market bubbles by Goetzmann (2015):

| Bubble = boom followed by a crash.

| A boom is a large, rapid increase in stock prices.

1. Market value (or cumulative return) increased by at least 100% in one year.
2. A period of three years over which the market increased by 100%.

| A crash is defined as:

1. A drop of at least 50% in the following year, i.e. following a boom year.
2. A drop of at least 50% over the next five years.

Asset price bubbles in the stock market

The dot.com bubble

Development of the Nasdaq:



Source: Wikipedia

- | Peak in March 2000 at 5046,86 points.
- | More than twice of the value at which it stood the year before.
- | October 9th 2002 down to 1114,11 points
- | No fundamental value available.

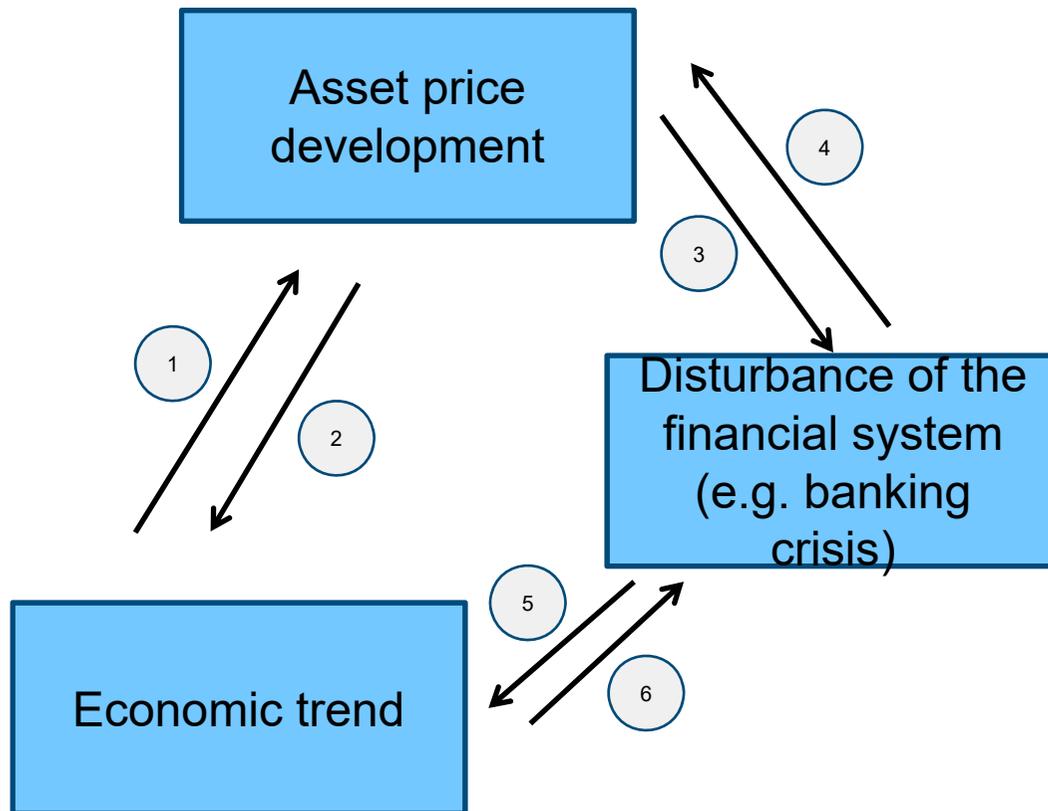
Asset price bubbles in the stock market

Reflection

- | Why do asset price bubbles pose a risk?
- | What can be done about it?

Asset price bubbles in the stock market

Asset prices, economic trend and disturbance of the financial system



- Asset prices and economic trend

- 1) Higher asset prices lead to higher consumption and investment (higher real GDP growth)
- 2) The expected economic trend influences the expectation of profits of enterprises and therefore the value of the stock price.

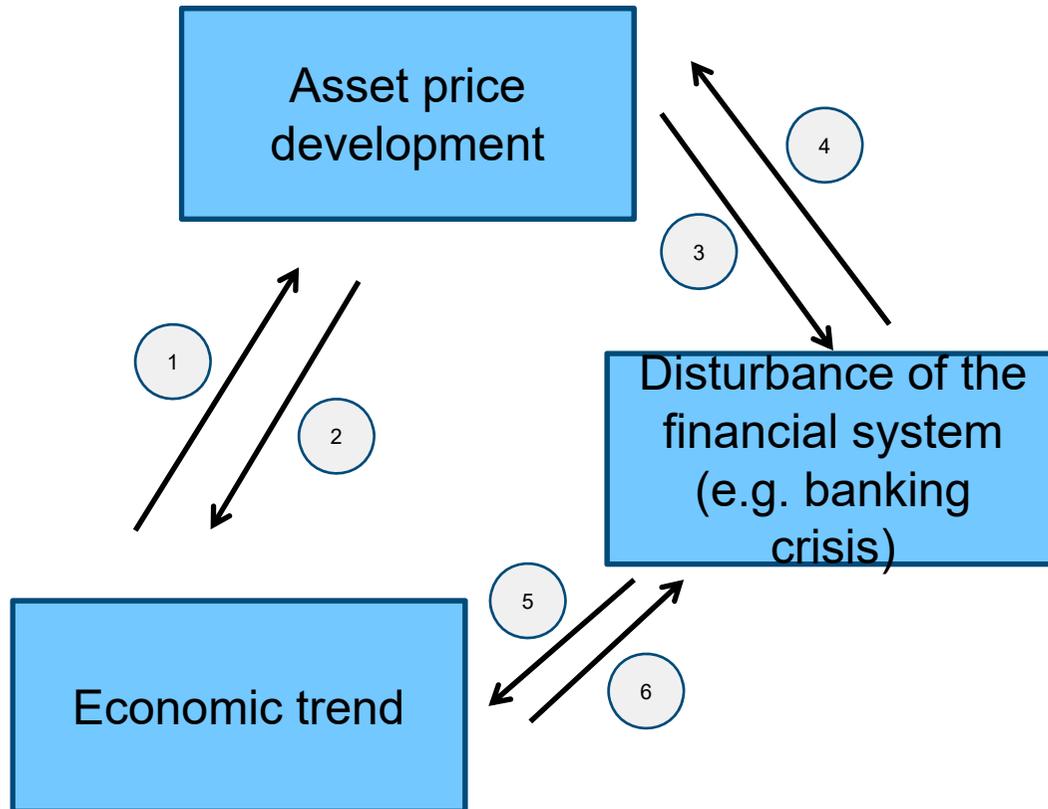
- Asset prices and banking crisis

- 3) Large asset price drops lower the value of banks' collateral, this might lead to higher losses in the banking sector.
- 4) Banking crisis lead to lower lending activity and indirectly to lower prices (e.g. house prices as the demand is lower; investment in start-ups)

Source: Kimmel (2006) pg. 322

Asset price bubbles in the stock market

Asset prices, economic trend and disturbance of the financial system



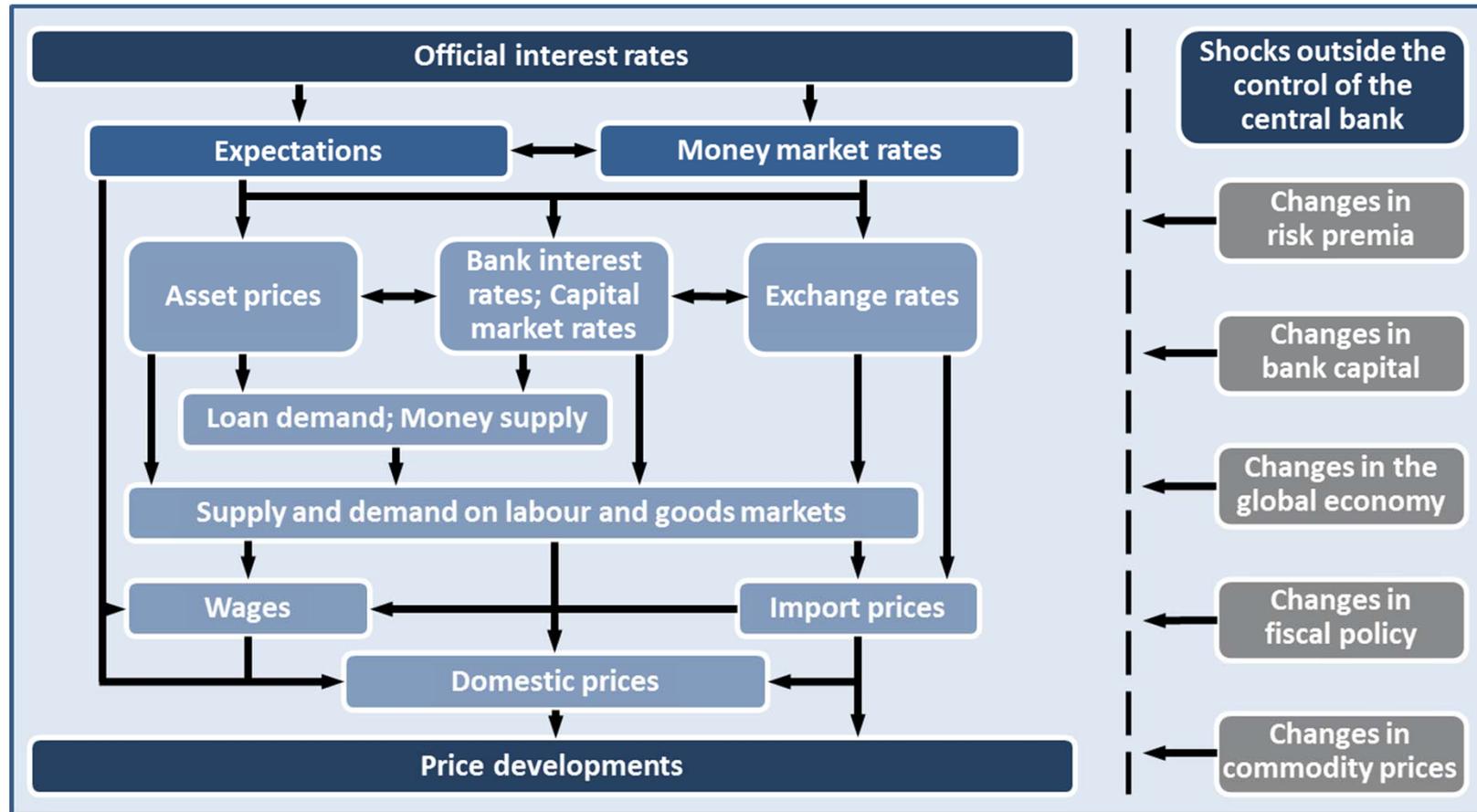
- Banking crisis and economic trend

- 5) Banking crisis can amplify economic downturns and lead to long recession periods.
- 6) Economic downturns in conjunction with a decrease in asset prices could lead to banking crisis.

Source: Kimmel (2006) pg. 322

Asset price bubbles in the stock market

Asset prices and monetary policy



Asset price bubbles in the stock market

What can be done?

| Macprudential policy

- Warnings in financial stability reports
- Increase resilience of financial intermediaries (equity, liquidity)
- Close markets

| Microprudential supervision

| Financial education

| ...

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Persistent deviation from covered interest rate parity

Introduction

I Definition for market dislocations:

„Financial **market dislocations** are circumstances in which **financial markets**, operating under stressful conditions, **cease to price assets correctly** in an absolute and relative basis.“

(Pasquariello (2014): Financial Market Dislocations)

I The assessment of absolute mispricing is subject to considerable debate and significant conceptual and empirical challenges.

I However: the assessment of relative mispricing stemming from arbitrage parity violations is less controversial.

I In the following: Persistent deviation from covered interest rate parity

Persistent deviation from covered interest rate parity

The concept of arbitrage

- | Assumption: prices of securities in financial markets fully reflect all available information.
- | The rationale behind this hypothesis: The concept of arbitrage.
 - Arbitrage is the practice of simultaneously buying and selling financial instruments to benefit from temporary price differences; eliminates a riskless profit opportunity.
 - Arbitrage leads to the state in which two financial instruments with the same risk and promised future payment will sell for the same price.
 - The people who simultaneously buy and sell financial instruments in order to benefit from temporary price differences, leading thereby to arbitrage, are called arbitrageurs.

| Who could be arbitrageurs?

Reflection

Persistent deviation from covered interest rate parity **Arbitrageurs and different kinds of arbitrage**

I **Arbitrageur**: in most cases a large **financial intermediary** with **good credit rating** (e.g. Hedge funds, investment banks,...).

I Two types of arbitrage: **Secured** and **unsecured** arbitrage

- **Secured** arbitrage: borrowing and lending funds on secured terms (arbitrageur e.g. hedge funds)
- **Unsecured** arbitrage: borrowing and funding on unsecured terms (arbitrageur e.g. bank's proprietary trading desk)

Persistent deviation from covered interest rate parity

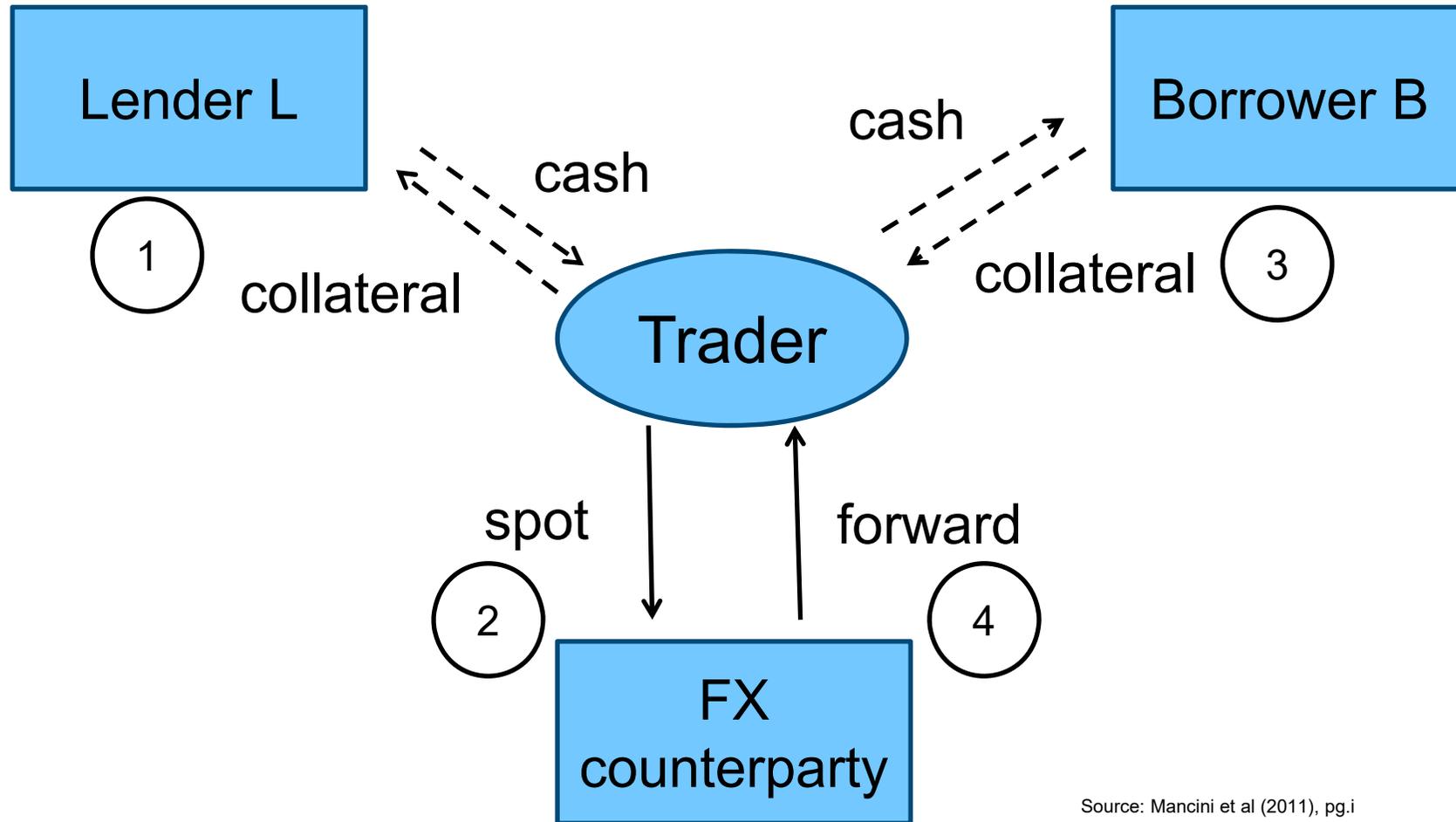
The concept of CIP arbitrage

- | The trade is borrowing in one currency (k) and lending in another (j) to take advantage of interest rate differentials while avoiding exchange rate risk.
- | Profits from CIP arbitrage can be expressed as:

$$z_{1,t} = \frac{F_{t...T}}{S_t} (1 + r_{j,t}) - (1 + r_{k,t})$$

- | S_t is the spot exchange rate at the price in currency k of one unit of currency j, $F_{t...T}$ is the forward exchange rate.
- | According to economic textbook: CIP arbitrage is normally risk less and should yield zero profits.

Persistent deviation from covered interest rate parity
Secured arbitrage



Source: Mancini et al (2011), pg.i

Persistent deviation from covered interest rate parity

Secured arbitrage

| CIP secured arbitrage involves four actions: two on the money market (repo and reverse repo) and two on the forex market (one spot and one forward).

1) Borrowing in any currency k for $T-t$ days (at interest cost $r_{k,t,T}$);

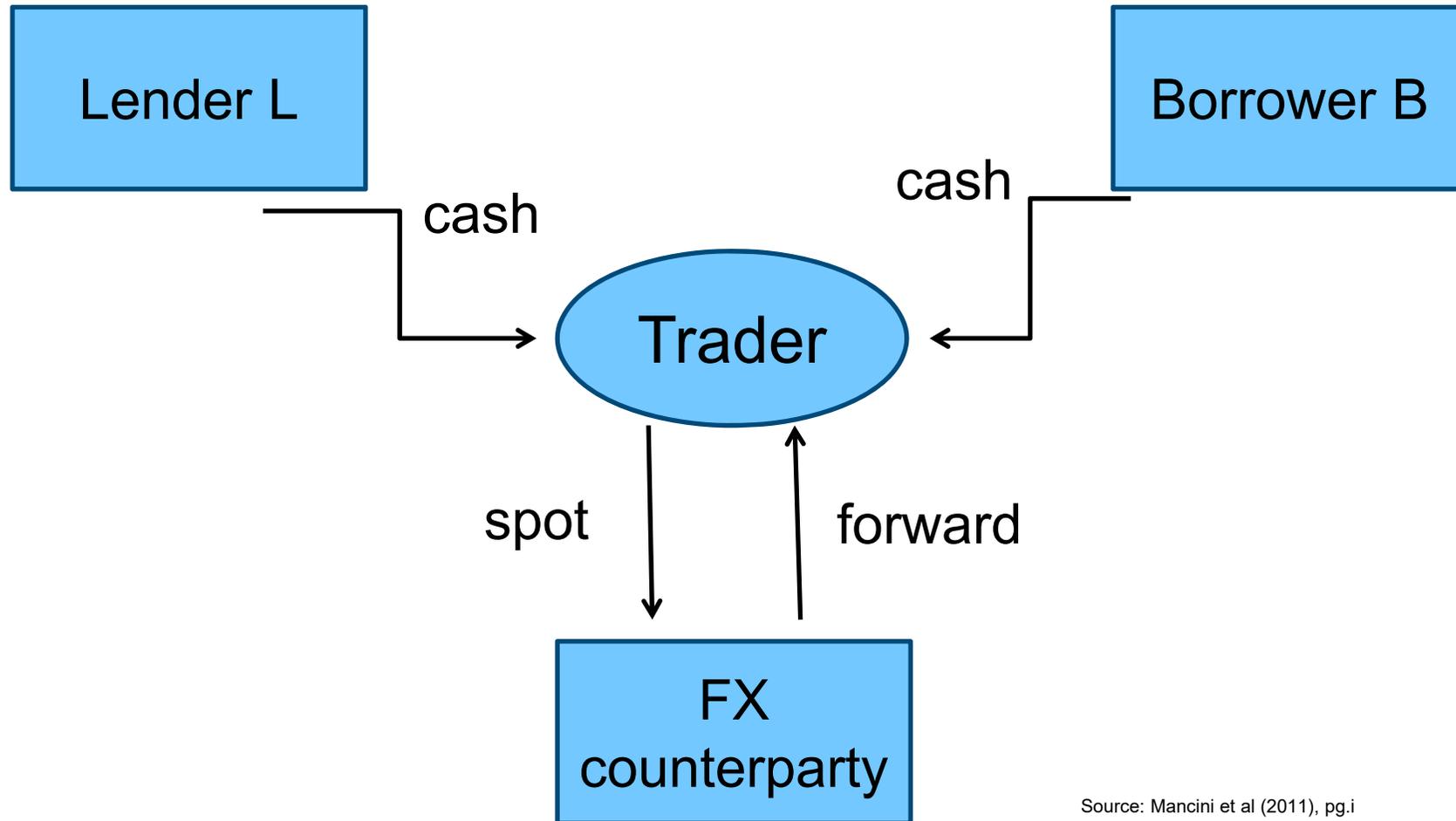
2) Exchange the borrowed amount to currency j at the spot exchange rate.

3) Lending in Currency j (at interest rate $r_{j,t,T}$)

4) Hedging the foreign exchange risk of repaying the original loan.

| The trader for secured arbitrage could be a hedge fund, e.g..

Persistent deviation from covered interest rate parity
Unsecured arbitrage



Source: Mancini et al (2011), pg.i

Persistent deviation from covered interest rate parity

Unsecured arbitrage

- | Unsecured arbitrage involves the money market and the FX market.
- | Lending and borrowing takes place at the money market at overnight bid and offer rates, with accompanying index swaps to hedge interest rate risk.
- | The trader could be a proprietary trading desk of an investment bank, e.g.

Persistent deviation from covered interest rate parity

For most of the post-Bretton Woods period until 2007, CIP was one of the most reliable and relied upon parity conditions in international finance. (Levich, 2017, pg. 1)

How did we rely on CIP?

Reflection

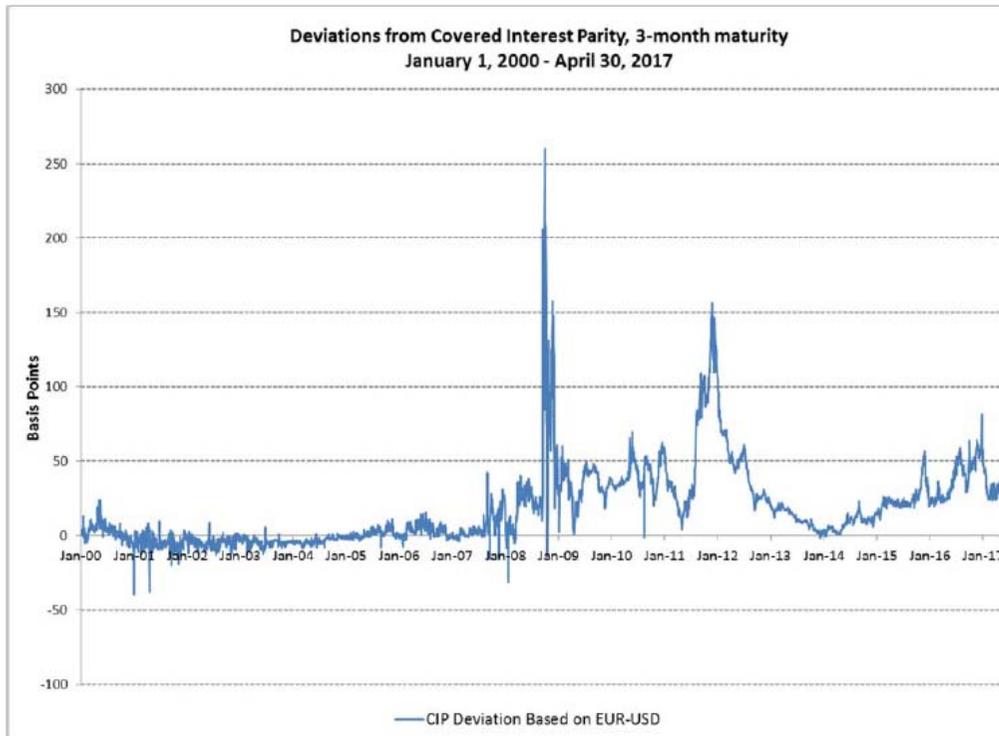
Deviation from covered interest rate parity Reliance on CIP arbitrage

I How did we rely on CIP?

- For knowing the term structure of equilibrium forward rates
- To understand the relationship between spot and forward speculative currency returns
- To understand the relationship between covered costs (and returns) in two or more currencies.
- In open macro models that assume perfect capital mobility and the equality of interest differentials and forward premia.

I Deviations from CIP provided their own barometer of conditions in the foreign exchange market and how close we were to perfect capital mobility.

Deviation from covered interest rate parity Figures



Note: Daily data on EUR/USD spot rates, 3-month forward rates, and 3-month USD LIBOR and EUR EURIBOR are from Bloomberg. Deviations from covered interest parity in basis points per annum calculated as $[(F/S) \times (1+i(\text{EUR})/400) - (1+i(\text{USD})/400)] \times 40,000$.

Source: Levich (2017) pg. 29

- Summer 2007: Two hedge funds operated by Bear Stearns suspended redemption; BNP Paribas announced that they were unable to value three hedge funds.
- May 2008: Bear Stearns collapsed
- September 2008: Lehman Brothers failed.
- End 2011-Jan 2012 Sovereign debt crisis in Europe.

Deviation from covered interest rate parity

Reflection

| What are possible factors that led to the sharp increase in CIP deviation?

Persistent deviation from covered interest rate parity

Possible factors leading to mispricing

- | Interbank market was in dislocation in 2008.
- | Further there was a lack of dollar funding liquidity due to:
 - Deleveraging imperatives
 - Prudential requirements
 - Limited capital to pledge in exchange for liquidity
- | Heightened sense of counterparty risks, even among large banks active in the FX-market
- | Limited balance sheet capacity (Hedge funds)

Persistent deviation from covered interest rate parity Consequences

Reflection

| What could be the consequences?

- Less reliance on CIP
- Enhance the resilience of arbitrageurs by higher liquidity requirements
- Enhance transparency
- ...

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The European sovereign debt market

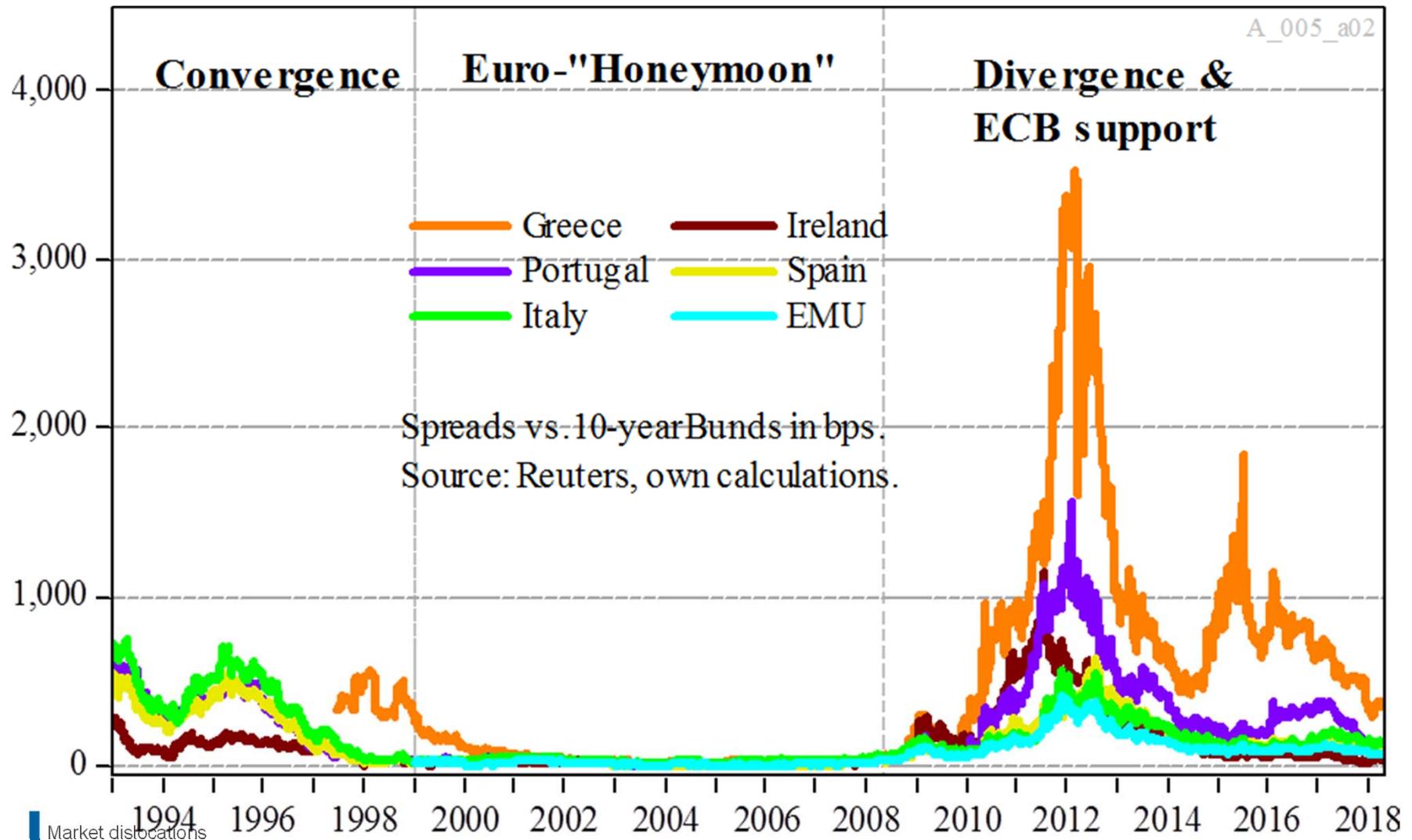
I Definition for financial market dislocations:

„Financial **market dislocations** are circumstances in which **financial markets**, operating under stressful conditions, **cease to price assets correctly** in an absolute and relative basis.“

(Pasquariello (2014): Financial Market Dislocations)

The European sovereign debt market

Euro area sovereign spreads



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Financial market failure not based on a dislocation

| So far the definition of market dislocation was:

„Financial **market dislocations** are circumstances in which **financial markets**, operating under stressful conditions, **cease to price assets correctly** in an absolute and relative basis.“

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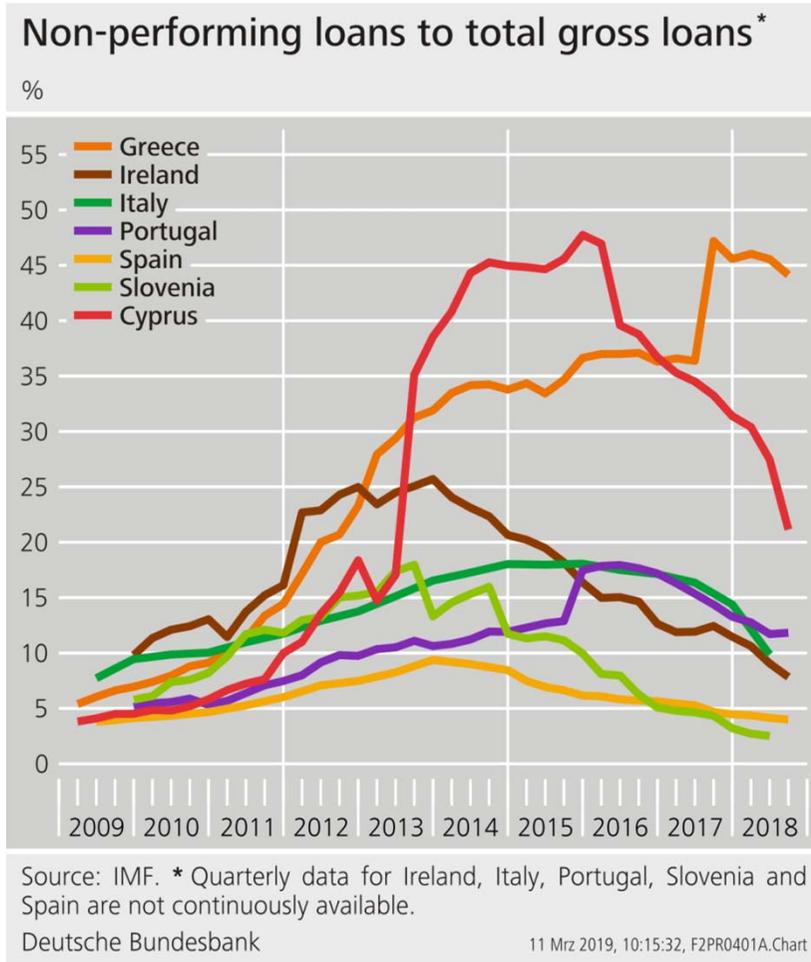
| Now:

What happens if there are high impediments that prevent a market to come about?

– Case study: The secondary markets for NPLs in Europe

Financial market failure not based on a dislocation

NPLs in the eurozone



- Stock of NPLs in the EU banking sector was around € 1.0 trillion at the end of 2016.
 - Countries hit particularly hard by the financial crisis
 - Ratios going down or stabilizing past 2 years (increase in Greece in 2017 due to change in measurement)
- Reasons for increase were diverse
 - Real estate bust
 - Recession
 - Others

Financial market failure not based on a dislocation
No secondary market for NPLs

- | Secondary markets for NPLs in Europe were prone to significant information asymmetries and uncertainties about true NPL values. (Market for lemons)
- | Wide gap between prices investors were willing to pay and the net book values on banks' balance sheets.
- | Several types of impediments explain wide bid-ask spreads in NPL markets

Financial market failure not based on a dislocation
Identified impediments for secondary markets of NPLs

Demand-side	Supply-side	Structural
<ul style="list-style-type: none">• Poor quality of NPL data• Lack of independent servicing capacity• Taxation (e.g. transaction taxes, VAT on servicing)	<ul style="list-style-type: none">• Accounting standards (IFRS 39) do not recognize all costs in book valuation of NPLs• First-mover disadvantage in shallow NPL markets• Lack of asset management and turn-around expertise	<ul style="list-style-type: none">• Weak, lengthy and inefficient debt enforcement and judicial proceedings• Legal requirements for loan sales (e.g. need for consent of debtor)

Based on: https://www.esrb.europa.eu/pub/pdf/reports/20170711_resolving_npl_report.en.pdf

Financial market failure not based on a dislocation

Reflection

| What could be done to remove existing market impediments in the secondary markets for NPLs in Europe?

Financial market failure not based on a dislocation

Policy actions on the EU level for a secondary market of NPLs

- | The following points are taken from the Report of the FSC Subgroup on Non-Performing Loans (<https://data.consilium.europa.eu/doc/document/ST-9854-2017-INIT/en/pdf>).
- | At the **bank level**, address challenges related to the availability, comparability and quality of data as well as the lack of standardization of loan tapes, in order to improve the marketability of NPLs.
- | **Increase bank's incentives to sell** and **widen the investor base** to acquire and manage NPLs in secondary markets, including through the securitization of NPLs .
- | **Lift impediments to third-party servicing** and remove remaining barriers to the transfer of NPLs to third-parties while ensuring the right level of consumer protection.
- | **Strengthen data and market infrastructures** to address market failures in secondary markets, where appropriate.

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Summary

- | „Financial market dislocations are circumstances in which financial markets, operating under stressful conditions, cease to price assets correctly in an absolute and relative basis.“ (Pasquariello (2014): Financial Market Dislocations)
- | Dislocations can occur in all market segments.
- | Market dislocations have an influence on economic development and they can endanger financial stability leading to financial crisis.
- | There are several measures (e.g. increase the resilience of market players, transparency, etc.) to limit the extent of market dislocations.
- | Not every market failure is a market dislocation, as well. The reasons why financial markets are not working are diverse and must be investigated case by case. Then the right measures can be taken to make the market work smoothly.



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