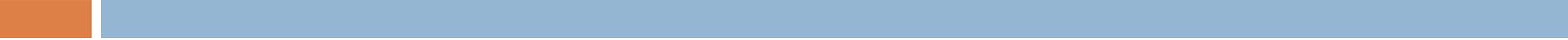


STABLE GROWTH IN AN ERA OF CRISES: LEARNING FROM ECONOMIC THEORY AND HISTORY

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Outline



- Failures of standard model
- Key policy debates today
- Explaining the failures of the standard model
- An example: bank recapitalization
- The Euro Crisis

I. THE FAILURES OF THE STANDARD MACROECONOMICS

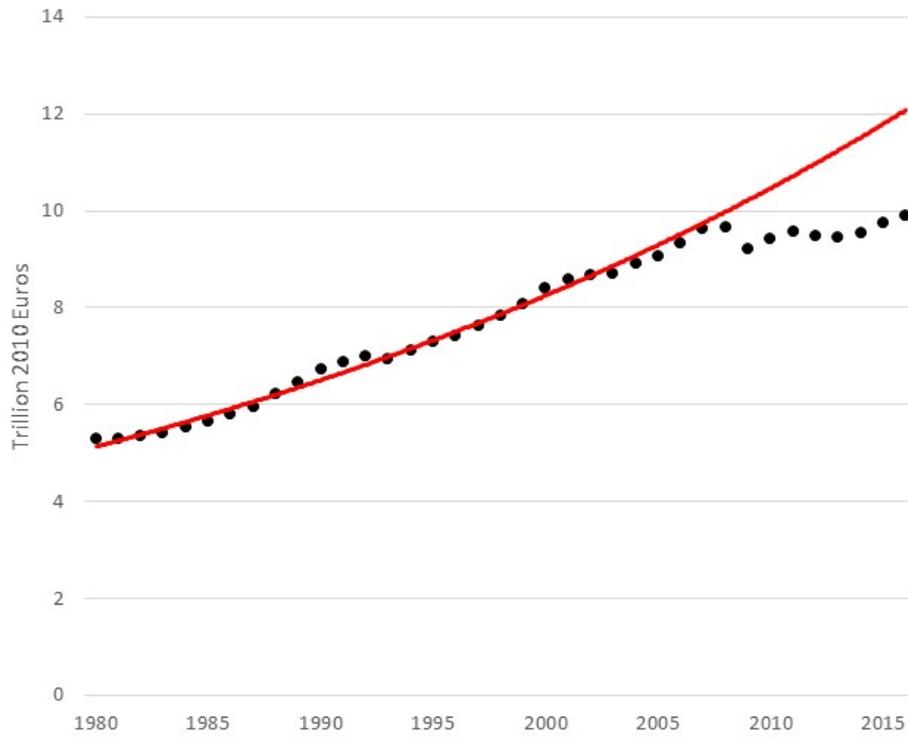
- Standard economic models did not predict the crisis
 - And *prediction* is the test of any science
- Worse: Most of the standard models (including those used by policymakers) argued that bubbles *couldn't* exist, because markets are efficient and stable
 - Many of the standard models *assumed* there could be no unemployment (labor markets clear)
 - If there was unemployment, it was because of wage rigidities
 - Implying countries with more flexible labor markets would have lower unemployment
 - Some labor policies (Germany) did work
 - Contradicted by ongoing experience

- Even after the bubble broke, argued that the problems were contained
 - Believed that risks were diversified
 - Financial interlinkages can exacerbate problems
 - Major area of current research Stiglitz, Battiston, Allen-Gale, etc.
 - Lack of guidance in how to respond then and broader problems of weak economy
 - For instance, in how to recapitalize the banks (good bank, bad bank)
 - How to design good stimulus measures
 - Consequence: extraordinarily slow recovery, enormous loss of economic output
- Didn't predict euro-crisis
 - And haven't given good guidance on its management
 - With outcomes that are disappointing
 - Depression in Spain and Greece—worse than the Great Depression

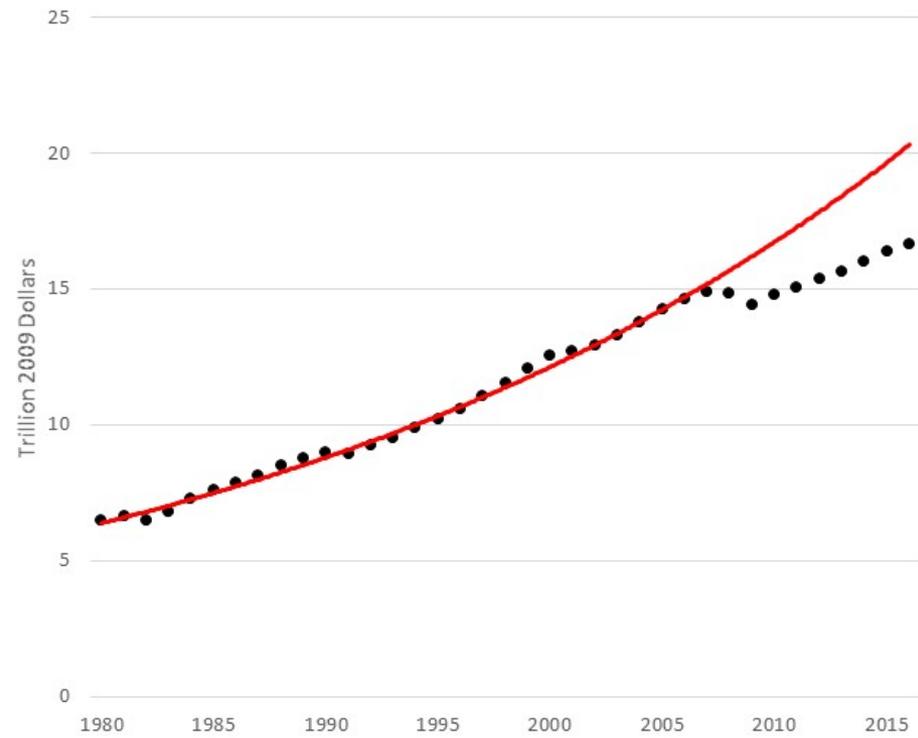
Euro area has performed much more poorly than the US—even though the crisis originated in US

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Euro Area GDP Trend Analysis, 1980-2016



US GDP Trend Analysis, 1980-2016



● Real GDP

— Exponential trend based on 1980-98

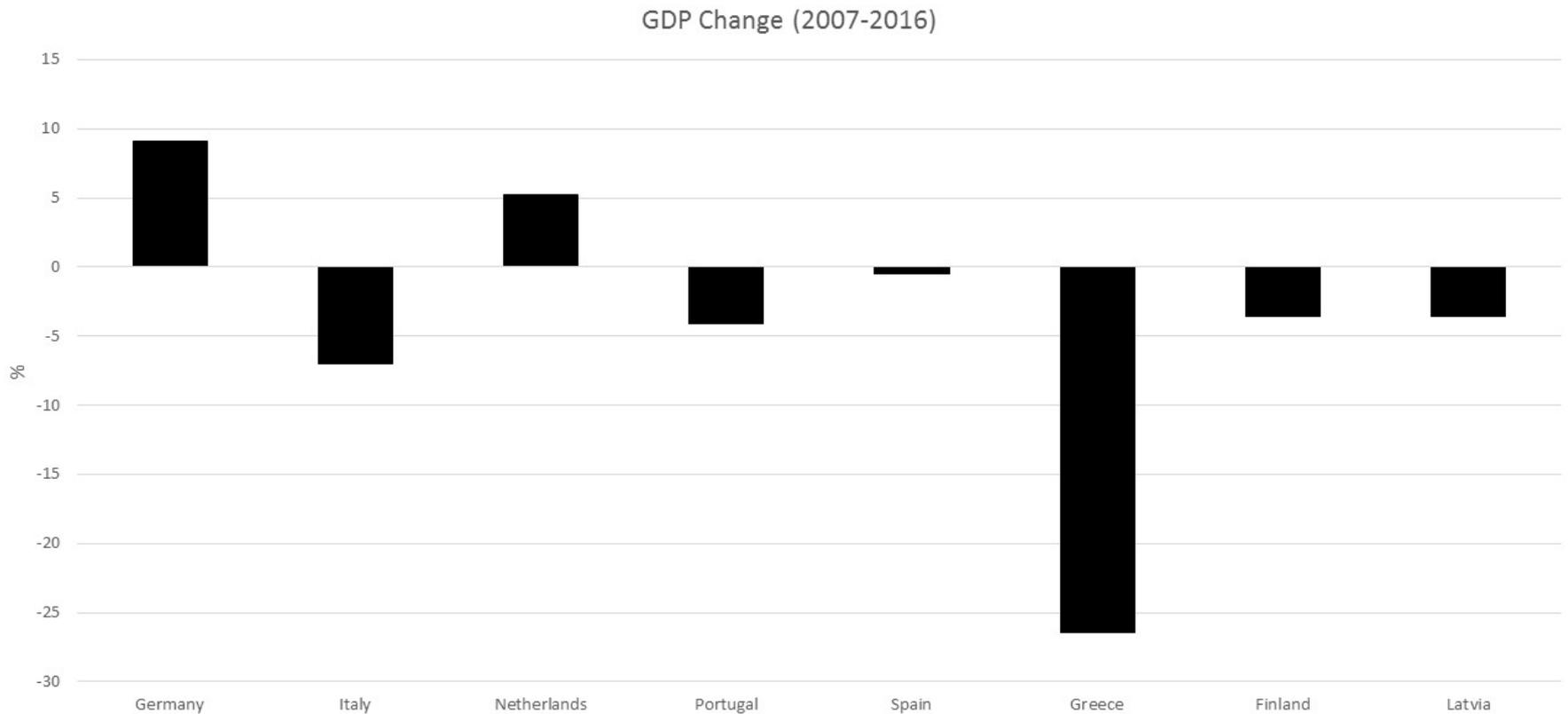
Real GDP is just recovering to earlier levels



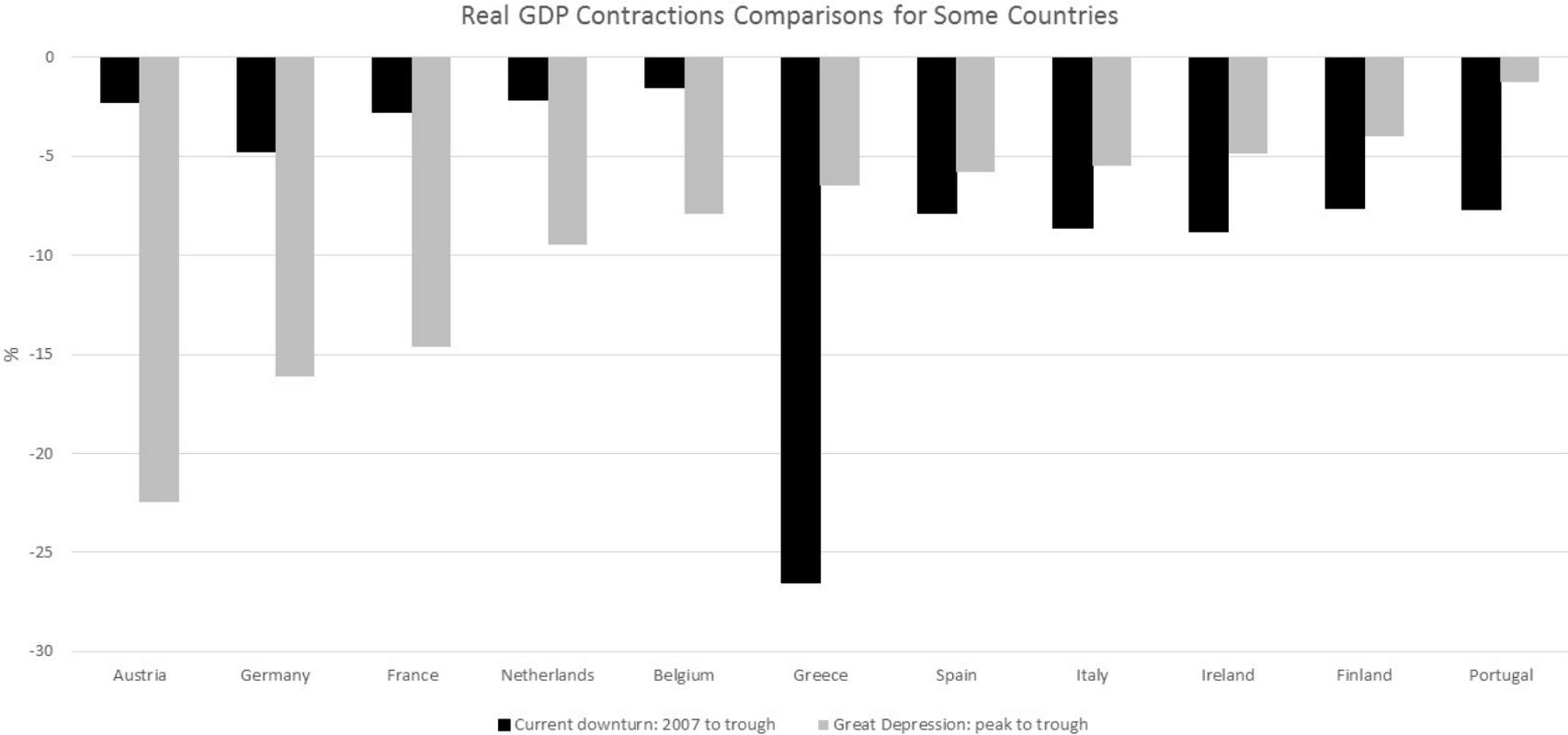
Source: IMF World Economic Outlook Database, April 2017

Many countries have lower GDP than before crisis

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For some countries downturn was worse than Great Depression



What went wrong? Why did the models fail?

- All models represent simplification
- Key issue: what were the critical omissions of the standard models? What were the most misleading assumptions of the models?
 - Answer depends partly on the questions being asked
- Wide variety of models employed, so any brief discussion has to entail some “caricature”
- Dynamic, stochastic, general equilibrium models focused on three key elements
 - Macro-dynamics crucial
 - Uncertainty is central
 - And partial equilibrium models are likely to be misleading

Key problem

- Not with “dynamic stochastic general equilibrium” analysis but specific assumptions
 - ▣ Need to simplify somewhere
 - ▣ Problem is that Standard Models made wrong simplifications
 - In representative agent models, there is no scope for information asymmetries (except with acute schizophrenia)
 - In representative agent models, there is no scope for redistributive effects
 - In representative agent models, there is no scope for a financial sector
 - Who is lending to whom? And what does bankruptcy mean?
 - ▣ We’ll discuss further limitations of the standard model later

Some of consequences

- Old analysis suggested CB should focus on inflation
 - ▣ Problems were deflation and financial fragility
 - ▣ To which CB policy contributed
 - ▣ Worse than just focusing on the wrong thing
- No scope for balance sheet effects;
- Theory of consumption “wrong”: assumption was that expenditure negatively related to interest rates—in some cases positively related
- Standard model focused on price rigidities: increasing concern about deflation—model had no insight

- Moving out of model, belief was that this was a financial sector crisis or balance sheet crisis: once financial sector and firm balance sheets repaired, economy would return to full employment
- Wrong, with major policy consequences
- There were deeper structural problems in economy
 - ▣ Move from manufacturing to service sector
 - ▣ Change in financial sector resulted in them failing to perform standard role, at least to the same extent

References: B. Greenwald and J. E. Stiglitz, "Financial Market Imperfections and Business Cycles," with B. Greenwald, Quarterly Journal of Economics, 108(1), February 1993, pp. 77-114. D. Delli Gatti, M. Gallegati, B. Greenwald, A. Russo, and J. E. Stiglitz, "Mobility Constraints, Productivity Trends, and Extended Crises," Journal of Economic Behavior & Organization, 83(3): 375– 393"; . D. Delli Gatti, M. Gallegati, B. Greenwald, A. Russo, and J. E. Stiglitz, Sectoral Imbalances and Long Run Crises," , in The Global Macro Economy and Finance, F. Allen, M. Aoki, J.-P. Fitoussi, N. Kiyotaki, R. Gordon, and J.E. Stiglitz, eds., IEA Conference Volume No. 150-III, Houndmills, UK and New York: Palgrave, pp. 61-97

II. KEY POLICY DEBATES



Four current policy debates and limited insights provided by standard model

1. Public Expenditure Multiplier

- Critical for assessing desirability of stimulus measures
- In full employment models, government expenditure multiplier is obviously zero
- Empirically, can be negative, partly because of data problems (biases arising from mismeasurement of public sector, as emphasized by Commission on the Measurement of Economic Performance and Social Progress)

- Relevant question—multiplier when there is high unemployment today and in coming periods
- Question on which there is scant relevant empirical information (say for US) because such periods are rare
- Strong theory for large multipliers
 - ▣ Absence of crowding out—monetary authority not going to raise interest rates

- Several reasons for crowding in
 - ▣ Investment, if public investment is complementary to private investment
 - ▣ Consumption, if current savings leads to more spending in future years, stimulating output then (Neary-Stiglitz)
- **Balanced budget** multiplier can also be large
 - ▣ Raising taxes at top
 - ▣ Spending money on high multiplier activities
- Standard models don't focus attention on these critical determinants of policy effectiveness

2. Contractionary Expansion

- Assertions based on going beyond standard model
 - “confidence” will be enhanced if deficits are but
 - Increased confidence will lead to increased investment
 - Will lead to increased GDP
 - Little empirical support for first two hypotheses (data available on expectations, confidence)
 - Especially (as now) when there is large excess capacity
 - HAS NEVER WORKED
 - ONLY INSTANCES OF COUNTRIES GROWING IS WHEN SOMETHING ELSE FILLS THE GAP—USUALLY EXPORTS
 - When trading partners are growing rapidly
 - Especially with flexible exchange rates
 - Not relevant to today’s situation

3. Deleveraging

- Debt is just a set of claims on assets
- In a world without financial constraints and no distributive consequences, debt should have no effects
- But debt does matter in the presence of financial constraints and where MPC of debtors and creditors differ markedly
- But it is foolish to think that consumption in the US will return to what it was in 2007 once deleveraging process is completed
- Household debt restructuring would have accelerated recovery

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- Before crisis, US savings rate was near zero
 - Bottom 80% were consuming 110% of their income
 - Even after deleveraging and fixing banking system, unlikely that savings will return to prior level
 - And we should be worried if it should—another crisis would lie down the road

4. Liquidity trap and the zero lower bound

- Being used as explanation for currency inefficacy of monetary policy
- With suggestions by some that monetary authorities should make a commitment to inflation, to lower expected real interest rate
- Suffers from same flaw that contributed to crisis--excessive focus on interest rates
- If it were the key problem, it could be solved through tax policy (changing consumption and investment tax credits over time having same effect on intertemporal prices)

Marked difference between situation today and Great Depression

- Then real interest rate was 10% or more
- Now it's -2%.
- With excess capacity (especially in real estate) little reason to believe significant increase in investment if the real interest rate were -3% or -4%.
- Critical issues: (i) credit availability (especially for SME's) and (ii) lending rate (spread between T-bill rate and lending rate endogenous variable to be explained)
- Real liquidity trap is related not to “demand for money” or “zero lower bound” but to banking system—not willing to lend
 - ▣ Needs to be explained
 - ▣ But that requires a theory of banking

Key lesson from these central policy debates

- DSGE provides few insights, not even an adequate framework for thinking about these issues
 - ▣ Distributive consequences
 - ▣ Financial market constraints
 - ▣ Heterogeneity

Are all central

III. WHERE DID THE STANDARD MODEL GO WRONG?

- Began as an attempt to reconcile macro and micro
- Could be done in two ways—“reform” micro to make it more consistent with macro; or vice versa
- Standard model took second approach
- Ironic—just at time when information economics, game theory, and behavioral economics were reformulating traditional microeconomics

Not a surprise that model didn't perform well

- But Ptolemaic attempts to “fix” the model were patchwork, off of a fundamentally flawed base
- Excessive reliance on **rationality** and **rational expectations**
 - ▣ Can't reconcile behavior of many market participants (bubble, mortgages, etc.)
 - Including key players in financial markets
 - ▣ Though some market participants rationally exploited irrationality of others

Problem was lack of *credit*

Credit is not the same as money (though in normal times, credit supply and money supply are related)

In Standard theory there is no credit rationing, liquidity “problem”

- ▣ Theory has to explain lack of availability of credit
- ▣ Most macro-models do not have a “**banking sector**”—yet it was problems in banks that were at the center
- ▣ Most macro-models do not have a “**shadow banking sector**”—yet part of the problem was the shift from the banking to the shadow banking sector
- ▣ **ONE CANNOT SUMMARIZE THE FINANCIAL SECTOR IN A MONEY DEMAND EQUATION**

- Standard model focuses too little attention on the determinants of the supply of credit,
- It focuses too much attention on the problem of intertemporal allocation
 - ▣ Intertemporal maximization problems provide little insight into the short term variations in the level of consumption (savings rates), that are at the heart of short term macro-economic analyses
 - ▣ In none of the policy discussions are such models at the core of the explanation of what is going on
 - Will lower LT interest rates be passed on to mortgagees?
 - Will mortgages be willing and able to refinance?

Consequence

- Because the financial sector was at the center of the crisis, the standard model
 - ▣ Provided little insight into appropriate regulatory regime before crisis
 - ▣ Provided little insight into how to recapitalize banks after crisis

Unemployment

- ❑ Many of the standard models *assumed* there could be no unemployment (labor markets clear)
 - Clearly not useful for understanding what to do in this crisis\
 - Unemployment is NOT search unemployment
- ❑ If there was unemployment, it was because of wage rigidities
 - Implying countries with more flexible labor markets would have lower unemployment
 - US, with most flexible labor market, performed worse than Germany and Sweden
- ❑ Some models assumed search costs—but search was not the problem

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- ▣ Some models assume that even if there are economic fluctuations, costs low
 - Work shared
 - Can smooth over time

Other critical missing ingredients

□ **Agency**

- Have to explain why banks adopted incentive structures to encourage excessive risk taking and short sighted behavior
- Have to explain why banks didn't divest themselves of risks in the manner that it was presumed they had

□ **Externalities**

- Huge consequences of bank failures
- Need to explain repeated failures of financial sector
 - Including failure to understand basic insights of MM theorem

Mathematical flaws

- Assumed diversification reduces risk
 - ▣ And would be true under simplifications of standard model
 - ▣ Led policymakers to believe that “risks were contained” when they were not
- But after crisis, talk about contagion
 - ▣ With non-convexities, interconnectedness amplifies risk
- Needed a *coherent* approach, taking into account benefits and costs of financial market integration, diversification and contagion

IV. AN EXAMPLE: MONETARY ECONOMICS WITH BANKS

- Banks are repository of institutional knowledge (information) that is not easily transferred
 - ▣ Internalization of information externalities provides better incentives in the acquisition of information
 - ▣ Cost: lack of *direct* diversification of risk
 - Though shareholder risk diversification can still occur
 - ▣ But risk diversification attenuates information incentives
 - Failures of securitization were predictable and predicted

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- Banks still locus of most SME lending
 - ▣ Variability in SME central to understanding macroeconomic variability (employment, investment)

- Standard models didn't model banking sector carefully (or at all)
 - ▣ Often summarized in a money demand equation
 - ▣ May work OK in normal times
 - ▣ But not now, or in other times of crisis (East Asia)
- Key channel through monetary policy affects the economy is availability of credit (Greenwald-Stiglitz, 2003, *Towards a New Paradigm in Monetary Economics*)
 - ▣ And the terms at which it is available (spread between T-bill rate and lending rate) is an **endogenous** variable, which can be affected by conventional policies and regulatory policies)

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- Lack of model of banking meant monetary authorities had little to say about best way of restructuring banks
 - ▣ In fact—total confusion
 - ▣ Inability to restart SME lending should not be a surprise
 - ▣ But, with interest rates near zero, it is not (standard) liquidity trap

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- Implicit assumptions in much of discussion that
 - ▣ Private bankers provide efficient allocation of funds, better than having government exercise any voice
 - Remarkable given track record, predatory lending, market manipulation, abusive and anti-competitive credit card practices, etc.
 - ▣ Also implicit assumption that bank managers would treat government provided funds as if it were just like any “shareholders”—and that they would *not* just maximize the return to “old” shareholders
 - No basis for belief

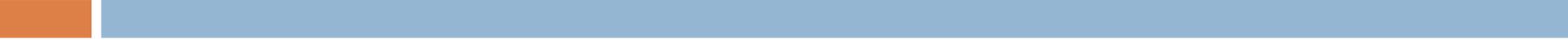
More realistic model

Assume no change in control, bank managers maximize expected utility of profits to old owners (don't care about returns to government)

$$\text{Max } U(\pi)$$

$$\text{Where } \pi = \max \{(1 - \alpha)(Y - rB - r_g B_g), 0\}$$

Where α represents the dilution to government (through shares and/or warrants) and r_g is the coupon on the preferred shares and B_g is the capital injection through preferred shares)



Three states of nature (assuming can order by level of macroeconomic activity)

- (a) $\theta \leq \theta_1$: bank goes bankrupt
- (b) $\theta_1 \leq \theta \leq \theta_2$: old owners make no profit, but bank does not go bankrupt
- (c) $\theta \geq \theta_2$: bank makes profit for old owners, preferred shares are fully paid

Financing through preferred shares with/without warrants vs. equity affects size of each region and weight put on each

- If government charges actuarially fair interest rate on preferred shares, then $r_g > r$, so (region in which old owners make no profit is actually increased
- Best form of recapitalization: government shares (preferably with control)
- Worst (with respect to decision making): injecting capital just through preferred shares

ASKING THE RIGHT QUESTIONS

- Test of a good macro-model is not whether it predicts a little better in “normal” times, but whether it anticipates abnormal times and describes what happens then
 - ▣ Black holes “normally” don’t occur
 - ▣ Standard economic methodology would therefore discard physics models in which they play a central role
 - ▣ Recession is a pathology through which we can come to understand better the functioning of a normal economy

Major puzzles in understanding deep fluctuations:

1. Bubbles

- Repeatedly occur
 - ▣ To what extent are they the result of “irrational exuberance”
 - ▣ To what extent are they the result of rational herding
 - ▣ What are the structural properties (collateral-based lending) that make it more likely
 - ▣ What are the policies that can make it less likely
- UNLIKE STANDARD MODEL, SOURCE OF PERTURBATION TO ECONOMY IS *ENDOGENOUS*

2. Fast declines

- In the absence of war, state variables (capital stocks) change slowly. Why then can the state of the economy change so quickly?
- Especially puzzling because we normally think of economies as having large “buffers”, shock absorbers (like inventories)
- Financial constraints why shocks get amplified

3. Slow recovery

- There were large losses associated with misallocation of capital before the bubble broke. It is easy to construct models of bubbles. But most of the losses occur after the bubble breaks, in the persistent gap between actual and potential output
 - ▣ There are the same human, physical, and natural resources now that there were in 2007: the failure today is that we are not using those resources fully
 - In principle, debt should not be an impediment to the full utilization of resources
 - Only affects claims on national income, assets

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- Standard theory predicts a relatively quick recovery, as the economy adjusts to new “reality”
 - New equilibrium associated with new state variables (treating expectations as a state variable)
 - And sometimes that is the case (V-shaped recovery)
 - But sometimes the recovery is very slow
 - Persistence of effects of shocks
 - (partially explained by information/credit market imperfections (Greenwald-Stiglitz))—rebuilding balance sheets takes time

- But current downturn is more than a balance sheet recession, or even a financial sector crisis
 - ▣ Financial sector largely repaired
- Related to structural transformation (like the Great Depression)

V. THE EURO CRISIS

- Result of Europe's flawed economic framework
- Took away two key adjustment mechanisms (interest rates and exchange rates) and didn't put anything in its place
- Worse: created an institutional framework intended to promote efficiency, but which led to inefficiency, instability, and divergence
- Created an institutional framework that impeded adjustment and risked crisis
 - ▣ Separating out monetary authority from creator of sovereign debt meant that European countries (like developing countries) now faced the risk of default

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- So long as there was rapid growth, everything *seemed* OK
 - But excessive confidence brought on by euro contributed to excessive lending to Spain, Greece, and other crisis countries
 - Inevitable that different countries would be buffeted by different shocks
 - And different countries would face different long term rates of growth of productivity

- Euro introduces, within Europe, a kind of rigidity analogous to the gold standard—makes adjustments more difficult
 - ▣ Iceland, with deepest crisis, is now doing much better than other crisis countries in Europe, US
 - ▣ Europe hurt by America's “beggar-thy-neighbor” policies, as quantitative easing works to lower exchange rate, and ECB doesn't fully respond

“Internal devaluation” is no substitute

- Deflation hard to coordinate
- And causes hardship, with unindexed debt contracts—borrowers can’t pay back what is owed
 - ▣ Leading to financial stress and instability
- If internal devaluation was an easy substitute, gold standard would not have imposed any constraint on adjustment

Belief in “free markets” without paying attention to details

- Free mobility of labor—but workers could move to escape debt burdens, implying allocation of labor was not efficient
- Free mobility of capital and goods—but without tax harmonization, implying allocation of capital was not efficient (tax competition)
- Single market principle—banks regulated in any country could operate in any other
 - ▣ Implying inadequately regulated financial institutions could bring problems across borders
 - ▣ Especially important as financial markets become more interlinked
 - ▣ Implying distorted banking system—implicit guarantee of some governments worth more than others (greater capacity for bailouts)
 - ▣ This was key: without common deposit insurance, money left weak countries and went to strong, again leading to divergence

Wrong analysis of convergence

- Realized that Eurozone was not an optimal currency area
- Would need convergence
- But thought all that was required was managing debts and deficits
 - ▣ Wrong—Ireland and Spain had surpluses before crisis
- Restrictions on industrial policies removed important instrument for convergence

Austerity

- Flawed policy response, focusing on austerity and structural reform
- Austerity based on misdiagnosis of problem
- Same prescription (based on same flawed diagnosis) used against Argentina and East Asia
 - Didn't work then
 - Won't work now
- *At most* austerity might prevent the next crisis; doesn't solve this one
 - Anymore than giving lectures does
- But there is no reason to believe Fiscal Compact would even prevent another crisis
 - Ireland and Spain had surpluses and low debt/GDP before crisis—so commitment to balanced budgets wouldn't even have prevented their problem
 - Really a suicide pact

Short-term fixes haven't worked

- Haven't addressed underlying problem
 - ▣ Again wrong diagnosis: simply a liquidity problem
 - ▣ Confidence will be restored with bail out
- Haven't even reduced debt burdens (apart from Greek restructuring)
- Not a surprise that short time fixes have failed

Structural reforms

- Many Programs have heavy emphasis on structural reforms
 - ▣ But structural reforms take time
 - ▣ And mostly are supply side measures
 - ▣ Problem today is lack of demand
 - ▣ Design of supply side measures often worsened problem of demand

Structural problems on which they have focused didn't create crisis

- And resolving them won't resolve crisis
- Some so-called structural reforms may weaken economy by weakening demand
 - ▣ Labor market flexibility (code word for lowering wages)
 - ▣ US—allegedly most flexible labor market—has not performed well; much worse than Germany and other European countries with better systems of social protection
 - ▣ Increasing consensus that growth in inequality in US contributed to crisis
 - Led to weaker demand
 - Fed tried to offset by creating a bubble, through low interest rates and lax regulation
- Real structural transformation is needed—e.g. in many countries, from manufacturing to service sector
- **WHAT IS REALLY NEEDED IS A CHANGE IN THE STRUCTURE OF THE EUROZONE ITSELF**

European policy package exacerbates crisis

- Without changing rules, divergent dynamic—strong countries getting stronger, weak countries weaker
- There are alternative policies that would create an alternative dynamic
 - ▣ Reverse austerity
 - ▣ Promote growth
 - ▣ Create a stable financial system and capital markets
 - ▣ Create a more stable labor market dynamic

Increasing growth: increasing demand

- Large expansion of EIB
- Countries with fiscal space should expand spending
- Increase in wages of strong countries (would be better way of correcting real exchange rate misalignment)
- Eurobonds would lower interest paid by weak countries—allowing governments to spend more on employment generation
 - **Fiscal union—but more than an austerity pact, common treasury**
 - Solidarity Fund for Stabilization
 - Eurobonds
 - **ECB borrowing, and on-lending to governments**

A stable banking system

- A common banking system
 - ▣ With system wide deposit insurance
 - ▣ With system wide regulation
 - ▣ Common resolution
 - ▣ Otherwise, money will flow out of banks of crisis countries to strong countries, exacerbating downturn

Stable and efficient factor markets



- Tax harmonization
- European wide debt

Concluding comments

- Most crises are man made—not caused by famines or other natural disasters
- The result of unstable market processes
- Made worse in recent years by a system that introduces new instabilities, imposes impediments to adjustments, and creates adverse dynamics
- Policy responses have, in many cases, only made matters worse

- The crisis is not only a crisis in the economy, but also *should* be a crisis in economics
 - Standard models contributed to policies that led to the crisis
 - Have provided us little guidance on how to respond
 - But the building blocks with which alternative theories can be constructed are already available
 - Research in economic theory over past three decades has been enormously rich and productive
 - The failure was to integrate adequately microeconomic insights into macro economic models
 - This is one of the main challenges going forward

In the future

- Less likely that a single model, a simple (but wrong) paradigm will dominate as it did in the past
 - ▣ Trade-offs in modeling
 - ▣ Greater realism in modeling banking/shadow banking, key distributional issues (life cycle), key financial market constraints may necessitate simplifying in other, less important directions
 - Complexities arising from intertemporal maximization over an infinite horizon of far less importance than those associated with an accurate depiction of financial markets

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- New policy frameworks need to be developed based on this new macroeconomic modeling
 - ▣ Focus not just on price stability but also in financial stability
 - There are alternative policies which enhance stability, and, once a crisis has occurred, are more likely to restore the economy to prosperity
 - But adopting these policies one has to break out of the straight jacket of much of conventional macro-economics