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INSTITUTIONAL MECHANISMS OF COUNTER-CYCLICAL POLICY OF INNOVATIONAL TRANSFORMATIONS

Defined methods and tools for institutional impact on nonlinear periodic fluctuations of the economy. Considered the mechanisms of fiscal, monetary, financial countercyclical policy. Substantiated the necessity to improve institutional policy of countercyclical regulation in a global transformation of economic development.

Keywords: economic cycle, monetary policy, fiscal policy, crisis, economic fluctuations.

Гайдей Д.О. ІНСТИТУЦІЙНІ МЕХАНІЗМИ АНТИЦИКЛІЧНОГО РЕГУЛЮВАННЯ ІННОВАЦІЙНИХ ТРАНСФОРМАЦІЙ

Визначено методи та інструменти інституційного впливу на нелінійні періодичні коливання економіки. Розглянуто механізми фіскального, монетарного, фінансового антициклічного регулювання. Обґрунтовано необхідність удосконалення інституційної політики антициклічного регулювання в умовах глобальних трансформацій економічного розвитку.

Ключові слова: економічний цикл, монетарна політика, фіскальна політика, криза, коливання економіки.

Гайдей Д.А. ИНСТИТУЦИОНАЛЬНЫЕ МЕХАНИЗМЫ АНТИЦИКЛИЧЕСКОГО РЕГУЛИРОВАНИЯ ИННОВАЦИОННЫХ ТРАНСФОРМАЦИЙ

Определены методы и инструменты институционального влияния на нелинейные периодические колебания экономики. Рассмотрены механизмы фискального, монетарного, финансового антициклического регулирования. Обоснована необходимость совершенствования институциональной политики антициклического регулирования в условиях глобальных трансформаций экономического развития.

Ключевые слова: экономический цикл, монетарная политика, фискальная политика, кризис, колебания экономики.

Statement of the problem. According to the National Bureau of Economic Research, there have been 11 business cycles from 1945 to 2009, with the average length of a cycle lasting about 69 months, or a little less than six years. The average expansion during this period has lasted 58.4 months, while the average contraction has lasted only 11.1 months.

The implications of the sharp international economic, financial and balance-of-payments cycles experienced by the global economic community since the 1970s have highlighted the importance of institutional sector in the propagation of economic disturbances.

Analyses of latest studies and publications. The attempts to analyze the nature of business cycles represented in works of A. F. Burns, W. C. Mitchell, A. Sullivan, J. W. Forrester, A. Telecote and oth-

ers. The problems of counter-cyclical policy are widely analyzed in publications of the National Bureau of Economic Research (NBER), Organization of Economic Co-operation and Development (OECD), Federal Reserve Bank of Chicago, Federal Reserve Bank of San-Francisco. But despite the intense attempts of economists to work out effective counter-cyclical policy mechanisms this question is still in need for scientific consideration.

Unsolved aspects of the problem. Due to significant variability of display areas, scope and duration of economic cycles there is consistent approach to understanding of the factors shaping cycles and the developments leading into the recent crisis, changes that have shaped room for manoeuvres and the effectiveness of policy and, finally what is required to avoid and to cope

with large adverse shocks, which explains the need for further study of the issue.

The objective of the article is to investigate different institutional approaches to the mechanism of countercyclical policy.

Presentation of the basic materials. Severe economic fluctuations which had recently hit the entire world economy after relatively prosperous decades despite numerous institutional efforts to control them have recalled an interest to the theory of economic cycles.

The term economic cycle refers to economy-wide fluctuations in production or economic activity over several months or years. These fluctuations occur around a long-term growth trend, and typically involve shifts over time between periods of relatively rapid economic growth (expansion or boom), and periods of relative stagnation or decline (contraction or recession) [1, 15].

These fluctuations in economic activity are usually measured by the growth rate of real gross domestic product and despite being recurrent they do not follow any strict harmonic pattern.

The widely accepted definition of business cycles refers to Arthur F. Burns' and Wesley C. Mitchell's definition: «Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises; a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions, and revivals which merge into the expansion phase of the next cycle; in duration, business cycles vary from more than one year to ten or twelve years; they are not divisible into shorter cycles of similar characteristics with amplitudes approximating their own» [2, 8].

There are two widely acknowledged key characteristics of the cycle. First, a large number of macroeconomic variables appear to move together; i.e., there is a co-movement of economic series over the cycle. Second, fluctuations in economic activity exhibit *persistence*; deviations from the average or trend level of activity are typically maintained for a considerable length of time. Taken together then, the business cycle alternations between expansion and recession are fairly slow and are broadly diffused throughout the economy [3].

The recent economic and financial crisis has challenged some presumptions about the forces shaping economic cycles and the effectiveness of policy that had developed during last years. There is considerable interest in devising government policies and institutions to influence prospects for economic growth and mitigate the distress associated with economic downturns. Proper evaluation of the benefits and costs of a given policy proposal requires knowledge of the determinants of growth and business cycles [4].

Fiscal policy can influence cyclical developments through the operation of the automatic stabilisers, discretionary policy and institutional settings.

Fiscal rules can help avoid the building up of debt and may lead to swifter consolidation of fiscal positions following a downturn. By assisting fiscal policy being counter-cyclical during the expansion phase of the cycle, they will also allow a stronger response to cope with large adverse shocks. But inappropriate fiscal rules can be destabilizing and fiscal rules may also lead to behavior aimed at respecting the letter but not the spirit of the rule. The ability of discretionary fiscal policy to affect economic activity following shocks depends on how private agents react.

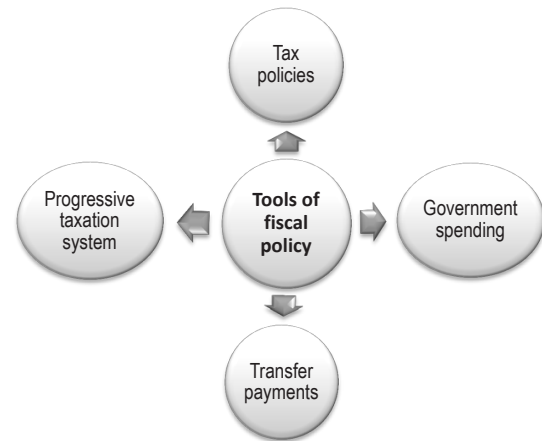


Figure 1. Basic tools of fiscal policy

Tax policies are an example of a discretionary counter-cyclical fiscal policy, meaning the government can choose whether to use tax policy to counter cyclical changes in the economy. By lowering the tax rate, the government puts more money into the hands of consumers, thereby increasing demand for goods and services and encouraging business growth. By raising taxes, the government decreases the amount of money available to consumers, thereby reducing demand and helping to slow an expanding economy.

Another discretionary fiscal policy tool used by the government is *government spending*. The government is a significant consumer of goods and services from the private sector. To increase overall demand and stimulate the economy, the government can increase its levels of spending. Similarly, to slow down the economy, the government can cut back on government spending.

Unemployment benefits are a form of *transfer payment* and an example of automatic counter-cyclical fiscal policy. Automatic policies, as opposed to discretionary policies, take effect on their own, without the need for government action. When the economy is stagnating, more and more people will be out of work and collecting unemployment benefits. This money allows these consumers to make purchases they may not otherwise have been able to make, meaning that recessions are softened.

A common kind of ongoing countercyclical policy is *progressive taxation*. This is a system in which the percentage of taxes on income increases with the rise of the economy. An increase in taxes tends to decrease demand, which helps to ensure that the rise in prosperity will not be too dramatic. This policy can be applied to an entire population or to people at a certain income level.

Institutional aspects of fiscal policy are also important drivers of fiscal deficits. Fiscal policy in countries with dispersed political power is less influenced by the electoral cycle but tends to be more procyclical over the business cycle because political fragmentation can lead to poorer fiscal policy decisions. In addition, political dispersion and a lack of political consensus may act as a break for fiscal consolidation after elections.

Factors that can affect the effectiveness of countercyclical fiscal policy include timeliness, the scope of the policy, and the citizens' reactions. If a policy is introduced too late, it can exacerbate the problem it is meant to remedy. When a fiscal policy is too dramatic or not bold enough, it can also destabilize the economy. In some cases, citizens may not react as desired. For example, while a significant tax refund may be meant

to stimulate the economy, there is the risk that citizens who are unnerved by the poor economy will save the money rather than increasing spending.

Monetary policy has been reactive to the cycle and countries with better inflation control can generally react more forcefully to cyclical developments. While monetary policy has largely responded to inflation and output developments there have been some large and persistent deviations. Estimated monetary policy reaction functions suggest that the weight assigned to inflation and the output gap can differ significantly across countries. Usually interest rates react more than proportionally to changes in the inflation rate.

Differences in the size and completeness of financial markets can imply a different pass through from policy rates to market rates and will also lead to differences in consumption and investment smoothing. However, better developed financial markets may also mean that it is harder to rein in economic activity that is strongly influenced by asset price developments. Furthermore, greater financial integration and cross-border capital flows can influence long-term interest rates and imply different weights to transmission via the exchange rate as opposed to other transmission channels. When policy rates change, the determinants of financial market conditions such as long-term interest rates, credit conditions, exchange rate movements and asset price-related wealth effects can offset or amplify the intended policy impulse.

Asset price developments provide a particular challenge for policymakers. Asset prices played an important role in the build up to the crisis, but containing them with monetary policy could entail large collateral damage to activity and inflation. Besides the precautionary approach of avoiding an unnecessarily lax monetary policy stance that can stoke misalignments and considering a longer horizon for the inflation target, the incorporation of asset prices into the central bank's mandate faces many problems. While detecting the emergence of large asset price misalignments may be feasible, it remains difficult to identify them early and to predict turning points. Reacting to false alarms about turning points can imply large welfare costs, although there may be a case for leaning against the wind, if an asset price bubble is driven by a credit boom and prudential regulation is not judged to be sufficiently robust.

Table 1
Potential channels through which monetary policy can affect the economy

Chanel	Way of affection
The interest rate channel	changes in the nominal interest rate, in the presence of price stickiness, change the real short-term interest rate and thus can influence real long-term rates. Changes in real long-term interest rates will affect investment and consumption boosting or depressing aggregate demand. The interest rate channel includes the effects of monetary policy on term premia through its communication and on risk premia through feedbacks from asset prices.
Credit channels:	
The narrow bank lending channel	a change in monetary policy can prompt a change in deposits. This can influence the supply of bank credit if banks are required or wish to hold a fraction of reserves or if other funding sources are imperfect substitutes for deposits.

The bank capital channel	monetary policy can influence bank capital (either through profitability or the market valuation of bank assets) and therefore bank lending in the presence of capital adequacy requirements.
The balance-sheet channel	the presence of asymmetric information, adverse selection and moral hazard problems can inhibit lending. A rise in asset prices raises the available collateral and lenders will extend credit more easily when the clients have healthier balance sheets.
The exchange rate channel	with floating exchange rates and greater internationalisation of financial markets, a cut in interest rates can lead to a depreciation of the currency. A depreciation will underpin net exports, thus boosting aggregate output and will also have effects on inflation and balance sheets.

Crisis of 2008-2008 years put into question the understanding of the impact of financial markets on the cycle and the cycle on financial markets.

A major aim of **financial market regulation** is to prevent financial instability and banking crises, which can lead to severe downturns. Banks and capital markets influence real activity and pro-cyclicality in financial markets can amplify cycles in the real economy.

Capital, provisioning, liquidity and maturity mismatch in the banking sector can generate pro-cyclical behavior in credit supply for a number of reasons including the regulatory setup, the nature of risk assessment and the prevailing incentives to take risks. In the available empirical work, there is little consensus on the degree of pro-cyclicality of the banking system. However, estimation results based on aggregate and bank-level micro datasets show a pronounced pro-cyclicality of the banking sector for most countries, even without taking into account the shadow banking system.

Recent international initiatives suggest ways to reduce the pro-cyclicality of the financial system by raising its shock absorption capacity, dealing with incentive problems and by adding an overarching macro-prudential layer to the supervision of the financial system.

A major aim of financial sector regulation is to prevent the failure of financial institutions that could destabilise the whole financial system and the economy. Prudential regulatory measures are set to maintain sufficient levels of capital, liquidity and provisions for bad loans of individual institutions to cope with unexpected macroeconomic or more specific (regional or sectoral) shocks and to maintain confidence of the public vis-a-vis the system via deposit insurance schemes to avoid bank runs [5].

Structural policies are not primarily set to strengthen the resilience of an economy, but they can directly and through their interaction with macroeconomic policies influence how shocks affect the economy. For example, during a downturn unemployment benefits rise and tax revenues diminish, implying automatic fiscal stabilisation. While the automatic stabilisers have an important place, particularly with respect to demand shocks, the fiscal policy instruments that underpin them are usually designed in the first instance to cater for equity or efficiency objectives, with automatic stabilisation arising as a side-benefit.

Other structural policies can influence the vulnerability of an economy to shocks. For example, reforms to housing and tax policies offer potential means to damp volatility.

Tax incentives supporting homeownership, in particular mortgage interest rate deductibility, tend to raise the leverage of households, making them more vulnerable to shocks. Property taxes that are linked to current house price valuations, on the other hand, have some potential to stabilise the housing market.

Tax policy that favours debt over equity financing provides incentives for increased leverage of firms making them and banks or other creditors more vulnerable to shocks.

The macroeconomic role of the financial sector has been subject to a long-standing debate that, with the recent financial crises, has attracted new attention. A central topic is the financial sector's contribution toward the cyclical nature of innovation and growth in real sectors. There are two mechanisms that amplify fluctuations in innovation:

- the skill channel;
- the competition channel

The skill channel. When the diffusion of a new technology favors product development in a particular sector, financial firms enter the sector because they anticipate higher funding volume and increased revenues. Since specialized financial firms have superior skills in project selection, they crowd out less skilled market participants.

The increase in skill on the investor side in turn accelerates innovation in the sector. On the other hand, when product development in a sector reaches a state of technological saturation, a corresponding decline in growth may be amplified by financial firms' decisions to stop paying attention to the sector, because specialization cost can no longer be amortized. Since the remaining investors in the financial market are less skilled in evaluating projects in the sector, the drop in growth is amplified.

In reality, innovative firms may not only be constrained by incentive problems between managers and investors, but also by a lack of investors who are sufficiently knowledgeable to evaluate projects that build on a new technology. In sectors with new technologies, project evaluation is typically a difficult task since, by definition, no past data exist on inventions and their future impact. In order to estimate a project's future cash flows, a financial firm has to exert effort to acquire knowledge on the industry's competitive environment, technological developments, consumer demand, and other aspects. The skill channel in the model covers this economic rationale. Time-varying technological conditions alter financial firms business opportunities and skill levels across sectors, which in turn feed back into real growth.

The competition channel. The model's second propagation channel, the competition channel, operates through an interaction between financial market competition and patent races in product markets. Financial firms' clients compete in patent races they strive to develop new products that displace current industry incumbents. Financial firms in turn compete in attracting clients with good prospects in product development.

The temporary nature of financial firms' competitive advantages in access to new ventures generates market segmentation: Financial firms maximize the surplus the clientele they can currently attract generates, taking competing financial firms' future entry and funding decisions as given.

New technologies give startups opportunities to enter existing industries, because they facilitate the development of new products that can displace those

that current incumbents offer. When agents anticipate that opportunities for further product improvements based on a new technology are going to be exhausted in the near future, financial firms with access to the funding of these "last opportunities" increase their investment because clients that successfully develop the latest leading-edge product at that time will have a safer incumbency position with less competition in the future. These firms are most likely to weather the remaining time of rapid product turnover and to become established incumbents once high-growth times are over. Through this mechanism, an anticipated end to improved technological and financial conditions can feed an investment boom just before the decline.

If financial firms and product developers were able to merge into one large conglomerate and eliminate competition, the described form of amplification would cease to exist. Similarly, if competitive advantages in the financial sector were not just temporary, but instead, one financial firm had a perpetual competitive advantage, this financial firm could align

diverging interests. In this environment, competition has the potential to generate the described amplification effects.

So the skill channel operates through financial firms' endogenous acquisition of sector-specific knowledge. The competition channel originates in an interaction between competition in the financial sector and patent races in product markets. The competition channel generates overinvestment in sectors with temporarily improved technological conditions; excessively high growth in these sectors comes at the cost of lower growth in the economy as a whole. Procyclical variation in technological conditions is less subject to amplification because it induces less variation in the value of financial firms' business opportunities across sectors [6].

Cycle of innovation reflects the growth of knowledge in society: innovation is based on the knowledge base of a society and expands this knowledge base. Different types of innovation along the cycle of innovation are realized with different forms of entrepreneurship, which are constrained or enabled by different institutions. One of the key roles of governments is to design, change or destruct institutions in order to improve welfare in society.

The translation of scientific insights into the world of policy practice has several caveats.

First, the success of institutional design in the context of innovation policy remains uncertain due to unforeseen interdependencies and unintended side-effects. Bringing the nuances and contingencies in the effects of institutional change centre stage might constrain the adoption of these insights into the world of policy practice.

The second caveat concerns the dangers of evidence based policy. Evidence based in social sciences means building on academic publications in social science fields. In contrast to for example the medicine field of research, replication research is not greatly valued in social sciences. There is a tendency to publish success studies thus undersampling failures or zero-effect outcomes. This means that the social science knowledge base on the effects of institutions on entrepreneurship and innovation more broadly is not likely to be an unbiased pool of insights for the design of institutions. In order to become a reliable pool of insights, social sciences should become more like the medical sciences and emphasize replication studies (over time and different contexts) and to engage as scholars with the actors in-

volved in order to uncover the ways in which institutions affects their behavior [7].

In general, policies and institutions that reduce labour and product market frictions may sharpen the initial impact of a shock but also reduce its persistence, by allowing faster reallocation, which can help speed the return to trend growth after a temporary shock or the adjustment to a permanent shock [8].

In economic downturns, countercyclical policies increase government indebtedness, raising future debt service obligations. And these new expenditure commitments must be financed by some mix of higher taxes, lower spending, and higher money growth in the future. Expectations of how future policies will adjust change current savings rates and can matter for the efficacy of countercyclical policies. Indeed, it is possible for responses to expected future policies to exacerbate and prolong recessions.

Countercyclical fiscal policies necessarily create dynamic links between current and future policies. Although the ultimate response of the aggregate economy to countercyclical policies must include an intertemporal dimension, many analyses break this intertemporal link and place the implications of expectations of future policies in the background.

Macro policies affect both intratemporal and intertemporal margins. Three findings emerge:

- Through the expectations channel, countercyclical policies may be counterproductive by creating a business cycle when there would be no cycle in the absence of countercyclical policies.

- Nontrivial fractions of variation in investment and velocity can be explained by variation in macro policies alone—without any nonpolicy sources of fluctuation.

- Persistence in key macro variables can arise solely from expectations of policy.

These findings do not necessarily contradict the view that on net countercyclical policies have been effective. But given the counterproductive effects stemming from expectations effects, countercyclical policies dampen the cycle, the intratemporal effects must be

substantially more powerful than earlier studies have claimed [9].

Findings. An important conclusion from the severity of the recent recession is that policy in various areas will have to be more prudent during upswings and to build in greater safety margins to be able to react to large adverse shocks. Moreover, policy settings need to be reconfigured to damp unnecessary volatility, while they should facilitate necessary adjustment. Such a reconfiguration needs to take a broad view as macro and microeconomic policy settings both react to and influence the cycle and they are often inter-related.

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