



Research Newsletter BDF eco

First quarter of 2017

Interviews

p. 4

Claire Lelarge has been a research economist at the Banque de France since August 2016. Before joining the Bank, she worked at Insee, the Ministry for Industry, the OECD, and CREST (Centre de Recherche en Économie et Statistique). **Jean-Guillaume Sahuc** is Head of the Financial Economics Research Division. He joined the Banque de France in 2004, where he has held various positions at the Directorate General Economics and International Relations.

Focus

The impact of a “soda tax” on prices: evidence from French micro data

p. 8

Nicoletta Berardi, Patrick Sevestre, Marine Tépaut and Alexandre Vigneron assess the pass-through of the French soda tax based on an original dataset.

How fiscal policy affects the price level: Britain’s first experience with paper money

p. 9

Pamfili Antipa shows that expectations regarding the sustainability of public finance can affect the price level.

Fiscal consolidation under imperfect credibility

p. 10

Matthieu Lemoine and Jesper Lindé analyse the impact that imperfect commitment of announced consolidation efforts has on the output cost of fiscal authority and on the effectiveness in reducing debt/GDP ratios in the short and medium term.

Precautionary saving and aggregate demand

p. 11

Edouard Challe, Julien Matheron, Xavier Ragot and Juan Rubio-Ramirez formulate a mediumscale, New Keynesian dynamic stochastic general equilibrium model with imperfect insurance.

Editorial

Marc-Olivier Strauss-Kahn, Director General Economics and International Relations



In December, the Banque de France (BDF) launched its new economic blog with educational posts based on its economic expertise and research. The blog is aimed at students, professionals, journalists and academics.

Why a Blog on the BDF website?

Since end-2016, the BDF website has hosted a blog called “*Eco Notepad*” to extend the dissemination of its studies and research. The blog features short educational analyses based on the Bank’s economic expertise and research to contribute to economic, financial and monetary debates. The posts are therefore based on substantive work, but linked to current events and topical issues.

Posts are published under the responsibility of their authors, with the usual caveat not binding the Bank. The final publication of the blog is only subject to an opinion by reviewers on the timeliness of their release date. Without upholding arguments that are explicitly contrary to the views of the BDF, the views expressed are those of the authors and do not necessarily reflect the positions of the Bank. On average, in 2017, four posts will be issued each month, except in August and end-December. Increasing the visibility of the Bank by promoting its studies and research work is the main reason which mobilises the contributors of the blog.

“ **A Banque de France blog to disseminate its studies and research.** ”

What are the common characteristics of the posts?

The posts must be concise and illustrated with educational charts and graphs. They are written so as to be understood by readers with some economic and financial culture. The posts have a double objective of popularising technical subjects and maintaining some certain scientific standard. Making complex analyses accessible to a non-specialised audience is also an objective of *Eco Notepad*.

The posts are published in English and French in order to facilitate discussions, also outside France. As the first regular blog of the Eurosystem, it draws on the experience of other central banks, especially

the New York FED (FEDNY). The FEDNY has hosted a blog (Liberty Street Economics, <http://libertystreeteconomics.newyorkfed.org/>) for five years. It has provided a forum for FEDNY researchers to express themselves on a variety of subjects while avoiding positions in stark opposition to those of the FED.

While the posts already published on the BDF site address issues that are at the heart of central banks' concerns, they differ in the subjects covered and the methods used by the authors (see the list of posts published at the end of the editorial). Out of the twenty posts already published after six months, about a quarter are related respectively to monetary policy, to the business cycle, and to inflation, long-term growth and globalisation, the remainder is more diversified. 75% of these posts deal directly with a topical issue, the others concern more "timeless" issues or have a more structural connotation. Subjects should be increasingly diversified in view of the projects under preparation.

What about the other dissemination media?

The blog does not replace the existing media for disseminating research. Some of these media have existed for decades (*Bulletin*, *Working Papers*) while others are more recent: *Financial Stability Review* and *Rue de la Banque* (RDB). In addition, BDF economists and researchers may continue to add posts on external blogs.

The Bank can thus disseminate the result of its research work in many ways: in a *Working Paper* as an academic document, in the *Bulletin* in ten pages, in a *RDB* in four pages and/or

via the Blog in about 1,000 words. These four media, which do not target the same readers, each contribute to broadening the reader base of the Bank's work.

The format of other publications is adjusted to take account of communication requirements, in particular via the Internet and social networks, by drawing on the principles of the Blog (conciseness, frequency, images, etc.). This applies to this *Letter* whose format has been modified and which will go from two to at least six issues per year:

- four full quarterly issues with an editorial, two interviews and four focus articles on summaries of papers accepted for publication or published in peer-reviewed journals;
- and at least two supplements for updating papers and providing the latest information on the Bank's research (seminars and

symposia, list of newcomers with their fields of competence, etc.).

What future for this blog?

Eco Notepad is in its early days and must still make itself known. It needs to mature and grow under the eye of its readers. Adjustments are likely to be necessary to improve the product in various ways.

The first service that can be requested from the readers is to provide substantiated feedback on published posts and more generally on the blog (content, form, frequency, etc.). In January-February 2018, we will carry out a satisfaction survey on the blog. In addition, circulating these posts through existing networks as well as mentioning the existence of this blog in reader conversations will be key factors in the success of *Eco Notepad*.

Marc-Olivier Strauss-Kahn is head of the Directorate General for Economics and International Relations at the Banque de France (BdF). He is a member of the BdF Executive Committee, the Vice-Chair of the BdF Foundation for Research, an Alternate Member of the Governors in various fora (G20, IMF, OECD, etc.) and in the BIS Board of Directors.

He has held various positions in modelling and forecasting, research and international affairs, management and policy advice, and been seconded to: the University of Chicago, the IMF, the OECD, the Governors' Committee of the Central Banks of the EEC, the BIS, the FED and the Inter-American Development Bank. He graduated in France (Econometrics at Paris I, Business at ESSEC, Political Science at IEP Paris and Public Economics at Paris X) as well as in the USA (PhD core in Economics at the University of Chicago). He has taught economics, published articles and been a member of various academic fora, e.g. the Board of the International Journal of Central Banking (IJCB).

List of posts

Nguyen (B.) (2017)

"Business cycles and Taylor rules in the euro area", 13 June.

Bignon (V.) and Jobst (C.) (2017)

"Economic crises and the lender of last resort", 30 May.

Marx (M.), Mojon (B.) and Velde (F. R.) (2017)

"Why have interest rates fallen far below the return on capital", 24 May.

Lelarge (C.) (2017)

"Does the high speed rail (TGV) infrastructure boost corporate competitiveness?", 15 May.

Jardet (C.) and Schmidt (K.) (2017)

"Towards a lasting recovery in euro area inflation?", 10 May.

Gauvin (L.), Jimborean (R.) and Ramos-Tallada (J.) (2017)

"Capital flows and domestic credit growth", 3 May.

Monnet (E.) and Puy (D.) (2017)

"Has globalization increased business cycle synchronization?", 19 April.

Vidon (E.) (2017)

"Brexit negotiations: hawks, doves and chickens", 13 April.

Avouyi-Dovi (S.), Borgy (V.), Pfister (C.) and Sédillot (F.) (2017)

"Stability of the household portfolio since the crisis", 6 April.

De Charsonville (L.) and Jardet (C.) (2017)

"Services prices in France and oil prices", 29 March.

Penalver (A.) (2017)

"The natural rate of interest: estimates for the euro area", 23 March.

Haincourt (S.) (2017)

"Exchange rate impact on the US and euro area", 15 March.

Avouyi-Dovi (S.), Bureau (B.), Lecat (R.), O'Donnell (C.) and Villette (J.-P.) (2017)

"Are there zombie firms in France?", 13 March.

Ferrara (L.) and Marsilli (C.) (2017)

"Global growth : optimism for 2017?", 23 February.

Marx (M.), Nguyen (B.) and Sahuc (J.-G.) (2017)

"The ECB monetary policy since 2014 and its positive impact on inflation", 10 February.

Mojon (B.) (2017)

"US elections, interest rates and Europe's monetary independence", 7 February.

Grossmann-Wirth (V.) and Monnet (E.) (2017)

"Why is inflation higher in the US than in the euro area?", 2 February.

Monnet (E.) and Thubin (C.) (2017)

"The significant impact of the French economic downturn in construction", 26 January.

Gaulier (G.), Steingress (W.) and Zignago (S.) (2017)

"The normalization of global trade and China", 9 January.

Ray (S.) (2016)

"Recovery in the housing market and credit conditions", 13 December.

Bergeaud (A.), Cette (G.) and Lecat (R.) (2016)

"Living standards and the risk of secular stagnation", 13 December.



Claire Lelarge has been a research economist at the French central bank since August 2016 and is a research affiliate at the CEPR. Prior to that, she held positions at the French Statistical Institute, at the French Ministry for Industry (*direction générale des entreprises*) and at the OECD. She was also a researcher at CREST (*Centre de Recherche en Economie et Statistique*) and visited the Centre for Economic Performance at the London School of Economics in 2010-2011. She has specialised in the analysis of firms' dynamics and organisational strategies and has written articles in the *Annals of Economics and Statistics*, *American Economic Journal: Macroeconomics*, *the Quarterly Journal of Economics* and *the American Economic Review*.

“ Documenting the financial strategies of French firms will help to improve our understanding of the conditions for efficient intervention...” ”

Can you tell us about your career path?

I studied social sciences at the École Normale Supérieure de Cachan (now ENS Paris-Saclay), specialising primarily in economics and field sociology. Despite my early rather literary background, I was more interested in quantitative approaches to human behaviour analysis than in the qualitative ones. Consequently, I decided to focus on quantitative economics and enrolled in the Master's Programme at APE (now PSE). I also passed the entrance exam for the national statistics institute (Insee/ENSAE), and am now affiliated to it. This is a very flexible institution offering a diversity of career paths: before joining the Banque de France, I spent seven years working at Insee and five years outside, working at the Ministry for Industry (Direction Générale des Entreprises), the OECD, and CREST (Centre de Recherche en Économie et Statistique). Along the way, I have become specialised in the economic analysis of firms, and have met and worked with many people who have given me advice and inspiration.

Which researchers influenced you most?

I first met Emmanuel Duguet during my doctoral studies and he contributed enormously to my training in econometrics. We wrote an article together on patents (Duguet and Lelarge 2012) using GHK simulation methods. Later on, I met Philippe Aghion who gave me the opportunity to work with him and his colleagues, and introduced me to the topic of organisational economics (Acemoglu et al., 2007). It was extremely motivating to start my career in this

way, and to be able to benefit from both the excellence of the CREST research centre and the highly cooperative environment of Insee.

While working on Philippe Aghion's project I met John Van Reenen, who became my main mentor for many years. I am still really impressed with his deep understanding of major topics, his incredible capacity for work and his generosity. He later invited me to spend the academic year 2009/2010 at the Centre for Economic Performance (CEP) at the London School of Economics where I met Luis Garicano and many other researchers. This was without doubt the most fruitful year in my career so far. When I returned to CREST, I started working on a project with John and Luis (Garicano et al., 2016) in which we proposed a methodology for quantifying the cost (in terms of productivity) of the misallocations generated by regulations indexed on firm sizes, which are prevalent in France and in many other countries.

During this period, I also met Eve Caroli, who co-authored various articles with Philippe Aghion and John Van Reenen. She introduced me to "feminism in economics", in a field where only few researchers are women. Most importantly, she helped me to gain some self confidence by convincing me to write and defend a PhD thesis.

To complete the picture, I have to mention David Thesmar who was my (particularly bright) teacher in empirical corporate finance at ENSAE. We later co-authored a short article about entrepreneurship and credit constraints (Lelarge et al., 2008), and he helped me to get a place with the NBER Entrepreneurship Research Bootcamp and the associated community of researchers.

What do you expect to achieve at the Banque de France? In your view, what does BdF expect from you?

I hope that my three years at the Banque de France will be beneficial for both sides and more specifically for the unit in charge of micro-data analysis (SAMIC). Half of the team is specialised in topics relating mainly to households, and I am part of the other half which focuses on the micro economics of firms. The researchers in the team are involved in many high potential projects relating to corporate finance and banking. I hope my particular thematic focus, which is somewhere between corporate finance, organisational economics and industrial organisation, will generate synergies. Through my colleagues, I expect to learn about the Banque de France's information system, although it might be difficult to actually use it myself during my planned three years at the bank. In return, it might be useful for me to tell them about the comparative advantages of Insee's information system. The system is widely available via the CASD (*Centre d'accès sécurisé aux données*) device and many of my colleagues at the DEMS already use it, especially for topics in labour economics. However, I think it could be leveraged even more to study firms' dynamics and firms' financing strategies.

What is your research agenda at the Banque de France?

When I arrived at the bank in August 2016 I had several projects on the go, mostly in industrial organisation and in labour

economics, in line with the particular thematic focuses at Insee. I first had to finalise the article on the productivity impact of size-based regulations, co-written with John Van Reenen and Luis Garicano, and which was published in the *American Economic Review* in November (Garicano et al., 2016). I later worked on a first draft of an article with Joaquin Blaum and Michael Peters (issued in the Banque de France *Working Paper* series in December). This paper shows the importance of taking into account firm-level heterogeneity in import behaviours in order to correctly estimate the productivity and price impacts of trade in intermediate inputs (Blaum et al., 2016). I am now working on a joint project with Pauline Charnoz and Corentin Trevien (Charnoz and Trevien, 2016), which investigates how the high-speed rail infrastructure might affect the productivity of French multi-site business organisations.

In addition, I have a fairly long list of questions in mind, which came up during my previous jobs at Insee and for which I have not yet had time to find convincing or rigorous answers. For example: how are aggregate flows of dividends to be understood in France? Do they say anything about the functioning of internal capital markets or about the overall cost of equity? Secondly, following on from a report that I had to write on this topic, I plan to work on the responses of firms to different features of French corporate tax, and the distortions that might be generated. Lastly, I am involved in a project documenting the organisational and financial strategies of the largest ("granular") French business groups, which I started after discussions at the June 2016 "Granularity" workshop organised by the Banque de France ("The Granularity of Macroeconomic Fluctuations: where do we stand?" (24 June 2016, Paris, Banque de France).

Could your research contribute to the design of monetary policy?

The question is a difficult one because I do not fully grasp (yet) the process by which monetary policy is constructed. I hope that my various projects aimed at gaining a better understanding of the (micro) foundations of productivity will provide a useful complement to the work of my colleagues at the DEMS. Similarly, I hope that documenting the financial strategies of French firms, from start-ups to huge corporate groups, will help to improve our understanding of the conditions for efficient intervention to alleviate financing and liquidity constraints in different populations of firms. Lastly, the world of businesses is very heterogeneous and complex, with many productive as well as financial interdependencies. Explaining the latter should be useful in understanding how to stabilise the economy.

References

Acemoglu (D.), Aghion (P.), Lelarge (C.), Van Reenen (J.) and Zilibotti (F.) (2007)

«Technology, information and the decentralization of the firm», *Quarterly Journal of Economics*, vol. 122, issue 4, pp. 1759-1799.

Blaum (J.), Lelarge (C.) and Peters (M.) (2016),

«The gains from input trade in firm based models of importing», NBER WP 21504, CEPR WP 11721, Banque de France WP 612.

Charnoz (P.), Lelarge (C.) and Trevien (C.) (2016)

«Communication costs and the internal organization of multi-plant businesses: evidence from the impact of the French high-speed rail», Insee WP G2016/02.

Duguet (E.) and Lelarge (C.) (2012)

«Does patenting increase the private incentives to innovate? A microeconomic analysis», *Annals of Economics and Statistics*, vol. 107-108, pp. 201-238.

Garicano (L.), Lelarge (C.) and Van Reenen (J.) (2016)

«Firm size distortions and the productivity distribution: evidence from France», *American Economic Review*, vol. 106, issue 11 (November), pp. 3439-3479.

Lelarge (C.), Sraer (D.) and Thesmar (D.) (2008)

«Credit constraint and entrepreneurship: evidence from a French loan guarantee program», in J. Lerner and A. Schoar (ed.), *International Differences in Entrepreneurship*, University of Chicago Press.



Jean-Guillaume Sahuc is Head of the Financial Economics Research Division. He holds a doctorate from the University of Evry-Val-d'Essonne and joined the Banque de France in 2004, where he has held various positions at the Directorate General Economics and International Relations (DGEI). He has been a professor at EDHEC and has taught at the Universities of Paris 1, Evry and Dauphine. He has also been a visiting researcher at the ECB. His work has been published in journals such as: *American Economic Journal: Macroeconomics*, *Journal of the European Economic Association*, *Economic Journal*, *Journal of Applied Econometrics*, *Journal of Money, Credit and Banking*, and *European Economic Review*.

“**Shedding light on issues of interest to a central bank is one of my priorities.**”

What is your profile?

My career path is that of an applied macroeconomist: someone who combines research and policy briefings. My research programme, begun 15 years ago, focuses on positive and normative analyses of macroeconomic policies in the euro area. Using a wide range of macroeconomic tools (mixing time series and general equilibrium models), I investigate the advantages and disadvantages of various monetary and fiscal policies. My work has also resulted in the publication of a book entitled *Monetary Policy* (edited by De Boeck in 2015), co-authored with Françoise Drumetz and Christian Pfister. It seeks to explain in terms accessible to a broader audience the actions of the main central banks, and in particular the choices and decisions taken in the face of the recent financial crisis.

How has an expert in macro models succeeded in areas more concerned with applied finance?

Until the 2008 global financial crisis, mainstream macroeconomics had taken an increasingly benign view of economic fluctuations. The crisis made it clear that this view was wrong and that there was a need for a deep reassessment. It was quite obvious to me that our usual structural models, built to describe aggregate economic fluctuations during normal times when markets can bring borrowers and lenders together in orderly ways, were not designed to be theories of financial crises (Fève et al., 2010, Avouyi-Dovi and Sahuc, 2016, Fève and Sahuc, forthcoming). To understand how a crisis appears and is transmitted to the economy, it

was therefore necessary to bring elements of finance into our macroeconomics framework.

In what way is your research useful to Banque de France or more generally to the conduct of monetary policy?

My concerns have always been the same: making research a tool for decision-making. Shedding light on issues of interest to a central bank is one of my priorities. For example, in the mid-2000s, while several observers argued that the ECB was systematically acting more gradually than the Fed, Frank Smets and I showed that the differences in the type, size and persistence of exogenous shocks can largely explain the difference in interest rate setting in the euro area relative to the United States (Sahuc and Smets, 2008). This study was carried out as part of a secondment to the ECB.

More recently, there has been a debate about the real effects of the measures taken by the Eurosystem since 2008. I felt I had a responsibility to take part and to provide answers. Using a structural model, Christophe Cahn, Julien Matheron and I suggest that the longer-term refinancing operations in conjunction with the full allotment procedure, implemented in 2008-2009, have played a key role in averting a major credit crunch (Cahn et al., forthcoming). I also emphasise that the macroeconomic effects of the ECB's recent asset purchase programme are potentially important when it is associated with forward guidance. Indeed, signalling that the future monetary policy stance will remain accommodative is a powerful transmission channel (Sahuc, 2016).

How does one combine policy issues and academic requirements?

The relationship is one that is quite natural. Indeed, the post-crisis years were marked by a profound renewal of the profession of central banker. Central banks have played a pivotal role in responding to the economic and financial crisis. We have invented and implemented entirely new instruments and expanded our field of intervention. These innovations have not been made without raising theoretical, practical and technical questions, and this in turn has prompted more fundamental research. For example, the lower bound of interest rates, which was seen as a theoretical curiosity, has become a very real issue, in which the academic world is now showing a keen interest. Another example is understanding the impact of the ECB's asset purchase programme on the dynamics of risk exposures with data on the security-level portfolio holdings of institutional investors (Kojien et al., 2017).

How would you describe the interaction between your own research and that of your team?

Recfin's main research themes are i) the modelling of the term structure of interest rates; ii) the analysis of the functioning of the banking system and the dynamics of financial markets; and iii) the study of monetary policy through a general equilibrium approach linking real and financial spheres. There are a lot of synergies within the team because the first two themes naturally feed into the third. For example, with Sarah Mouabbi, we came up with the idea of quantifying the macroeconomic effects of the

ECB's unconventional monetary policies using a structural model which includes a shadow Eonia rate extracted from the yield curve (Mouabbi and Sahuc, 2016).

Do you think that the responsibilities of the head of a division are compatible with research activities and the requirements of academic publications?

It is difficult to maintain a steady flow of research activities while working as a manager, particularly in a department which is constantly monitoring all matters related to monetary policy and participates in preparations for ECB Governing Council meetings. Making progress on ongoing

research projects requires patience as a researcher (because we know that we have less time to devote exclusively to research) and strong organisational skills as a manager. This means that these days I focus on fewer projects and take on a larger share of the policy workload. That said, I do believe that demonstrating leadership through example is critical and that being head of a research team means showing how things should be done, in order to encourage people and train the youngest.

What lessons did you draw in your first years of managing a team of researchers?

After four years as a deputy in the Monetary Policy Research Division and nearly two years

in the Financial Economics Research Division, I am delighted with my experience for several reasons. First of all it is extremely fulfilling to work with a variety of researchers who all have a shared passion for what they do. This is true for the permanent members of the team, as well as for the consultants or scientific partners (Jondeau and Sahuc, 2017). It is easier to be a conductor when the orchestra is already excellent. I also learn from them every day. Secondly, there is the personal satisfaction of feeling useful to our fellow citizens through our daily work. Finally, it is intellectually stimulating to be part of the monetary policy decision-making process. I have also learned that it is very important to guarantee time for research for economists so that the decision-making process is supported by creative ideas. Without innovation, there is no progress.

References

Avouyi-Dovi (S.) and Sahuc (J.-G.) (2016)

"On the sources of macroeconomic stability in the Euro area", European Economic Review, 83, pp. 40-63.

Cahn (C.), Matheron (J.) and Sahuc (J.-G.)

"Assessing the macroeconomic effects of LTROs during the Great Recession", Journal of Money, Credit and Banking, forthcoming.

Drumetz (F.), Pfister (C.) and Sahuc (J.-G.) (2015)

Politique monétaire, 2nd Edition, De Boeck.

Fève (P.), Matheron (J.) and Sahuc (J.-G.) (2010)

"Inflation target shocks and monetary policy inertia in the Euro area", The Economic Journal, 120, pp. 1100-1124.

Fève (P.) and Sahuc (J.-G.)

"In search of the transmission mechanism of fiscal policy in the Euro area", Journal of Applied Econometrics, forthcoming.

Jondeau (E.) and Sahuc (J.-G.) (2017)

"A general equilibrium appraisal of capital shortfall", mimeo.

Koijen (R.), Koulischer (F.), Nguyen (B.) and Yogo (M.) (2017)

"Euro area quantitative easing and portfolio rebalancing", American Economic Review P&P.

Mouabbi (S.) and Sahuc (J.-G.) (2016)

"Evaluating the macroeconomic effects of the ECB's unconventional monetary policies", mimeo.

Sahuc (J.-G.) and Smets (F.) (2008)

"Differences in interest rate policy at the ECB and the Fed: an investigation with a medium-scale DSGE model", Journal of Money, Credit, and Banking, 40, pp. 505-521.

Sahuc (J.-G.) (2016)

"The ECB's asset purchase programme: a model-based evaluation", Economics Letters, 145, pp. 136-140.

The impact of a “soda tax” on Prices: evidence from French micro data

Berardi (N.), Sevestre (P.), Tépaut (M.), and Vigneron (A.) (2016), “The impact of a “soda tax” on prices: evidence from French micro data”, *Applied Economics*.



Nicoletta Berardi has been a Research Economist in the Microeconomic Analysis Division since 2010. Her main research interests are the determinants of price setting and price dynamics. She has published articles in the *Journal of Money, Credit & Banking*, *Applied Economics* and the *Review of Income and Wealth* among others. She holds a PhD from the Toulouse School of Economics. Before joining the Banque de France, she worked as a consultant for the World Bank and the OECD.

“ ... the pass-through was heterogeneous across product categories, retail groups and beverage brands. ”

When goods are sold on markets characterised by imperfect competition, the theoretical literature suggests that excise taxes may be either under-shifted, fully shifted or even over-shifted to prices. Indeed, empirical studies regarding the impact of tax changes on prices reach very heterogeneous conclusions. What was the impact on consumer prices of the French “soda tax”? Have producers and retailers passed the soda tax through to consumer prices? To what extent and when?

A sugar-sweetened beverage (SSB) excise of 7.16 cents per litre, corresponding to a price increase of 7% on average, was introduced in France in January 2012. Similar SSB taxes on drinks with added sugar or sweetener already existed in some countries, such as Denmark, Finland and Hungary and in a number of US states. Moreover, since then several other countries, notably Mexico, have also introduced them. Despite the increasing interest in the impact of SSB taxes on soft drinks consumption and, consequently, on health and obesity, there is still little evidence regarding the impact of SSB taxes on soda prices. In fact, most studies about the effect of so-called “soda taxes” on health simply assume that the tax is fully passed through to prices.

A large and original dataset

Nicoletta Berardi, Patrick Sevestre, Marine Tépaut and Alexandre Vigneron assess the pass-through of the French soda tax based on an original dataset of more than 500,000 non-alcoholic beverage price records provided by a price comparator. They adopt

a specific econometric approach (difference in differences), comparing the price evolution of drinks belonging to the same product category i) with and without added sugar or sweetener, and ii) before and after the tax was introduced. Three product categories are considered in their paper: a) flavoured water; b) fruit-flavoured drinks and ready-to-drink tea; and c) soda (including cola, tonic water, energy drinks and other soft drinks).

Support for overall full shifting

Nicoletta Berardi et al. find that the French soda tax was fully shifted to soda prices and almost fully shifted to the prices of fruit-flavoured drinks, while there was a significant under-shifting of the tax to the prices of flavoured water. More specifically, the average increase in soda prices reached the expected 7.55 euro cents (corresponding to the full pass-through of the soda tax, given that value-added tax also applies to the excise), in fruit-flavoured drink prices it was 7.1 cents, and in flavoured water prices the pass-through was only 4.7 cents. Note that the preponderance of soda sales among the non-alcoholic beverages liable to the tax suggests a quasi-full shifting of the excise to beverage prices at the macroeconomic level, supporting the full shifting assumption often made in studies about the impact of SSB taxes on soft drink consumption.

Timing and heterogeneity of the pass-through

The authors also notice that the pass-through of the tax to beverage prices was spread

over several months. Despite the fact that a significant number of retailers left their prices unchanged in January 2012, between one half (for fruit-flavoured drinks) and two-thirds (for sodas) of the tax was, on average, already passed through to the prices in that same month. The stabilisation of the pass-through estimates for flavoured water and soda (and to a lower extent for fruit-flavoured drinks) from May 2012 onwards is interpreted as an indication that all the desired price adjustments associated with the SSB tax had been completed by the end of the first half of 2012.

Nicoletta Berardi et al. also emphasise that the pass-through was heterogeneous not only across product categories, but also across retail groups and beverage brands. Indeed, the assumption of a common pass-through either across brands or across retail groups is strongly rejected, whatever the product category. In particular, the average quasi-full shifting of the tax results from the combination of an under-shifting of the tax for large producers’ brands and an over-shifting in the case of private labels. Since private label products are characterised by both lower average prices and higher pass-through than other brands, it seems likely that the soda tax had a larger impact on low income households. Furthermore, French retailers passed through the soda tax to different extents. In particular, the two main retail groups passed through the soda tax to a lower extent than other retailers. These results are shown to be consistent with a simple producer-retailer bargaining framework.

How fiscal policy affects the price level: Britain's first experience with paper money

Antipa (P.) (2016), "How fiscal policy affects the price level: Britain's first experience with paper money", *The Journal of Economic History*, December.



Pamfili Antipa has worked as a Research Economist in the Monetary Policy Research Department since 2010. Her main research interests lie in monetary economics and economic history. She has published articles in the *Journal of Economic History* and the *Journal of Policy Modelling* among others.

“...significant changes in the *agio* coincided with events that prompted reassessment of Britain's expected military fate...”

Ever since the sovereign debt crisis erupted in the euro area, debt dynamics and their impact on the economy have been at the core of policy debates. A commonly cited risk from public debt accumulation is that it can bring about fiscally-induced inflation. The latter occurs when governments do not undertake the necessary actions to ensure fiscal sustainability, jeopardising the value of their currency to the detriment of their citizens. Pamfili Antipa assesses inflationary pressures in an environment of high public debt by analysing a historical precedent and shows that expectations regarding the sustainability of public finance can affect the price level.

Lessons from history

Between 1797 and 1821, Britain suspended the convertibility of paper money into gold in order to finance the Napoleonic Wars. This put the country on a fiat currency regime with a flexible exchange rate, features that characterise most industrialised economies today. By the time of Napoleon's final defeat at Waterloo in 1815, the price level exceeded its 1797 level by 22.3 percent and the debt-to-GDP ratio climbed to 226 percent. In today's terms, only Japan comes close to this ratio.

Given the substantial debt accumulation and inflation, returning to the pound's pre-war gold content would come at high deflationary cost. Another option – getting back to the gold standard at a devalued pound – would have spared the war-ridden economy from deflation and its impacts on economic activity. In addition, by decreasing the purchasing power of the pound, it would also have alleviated the burden of outstanding debt.

Contemporaries understood this trade-off between the nominal value of the pound and the real amount of outstanding government debt. They would form expectations about fiscal prospects to gauge whether the future policy choice would induce deflation or inflation. The type of information that mattered for predicted fiscal sustainability related to war finance, with roughly two-thirds of Britain's budget dedicated to warfare.

Financial data help to quantify the effects of agents' expectations on market prices

The above relation can be quantified using financial data that capture the expectations of economic agents as manifested in market prices. In particular, Pamfili Antipa uses a series, the *agio*, that is computed as the difference between the pound's official exchange rate into gold – the mint price – and its market exchange or spot rate. The mint price carried the promise that pounds would be exchanged against gold at the pre-war parity at some unknown moment in the future, conditional on the signing of a definite peace treaty. Differences between the two reflected a discount factor that distinguished the value of a paper pound at time t from its expected gold content in the future. The discount factor captured how risky and, by extension, how credible the promise of resuming the gold standard at its pre-war parity was in the eyes of contemporaries.

Significant changes in the *agio*, thus, conveyed information about events that caused contemporaries to alter their predictions on the future state of public finances. Pamfili Antipa first identifies the exact dates at which prices shifted to a higher level by conducting break tests. In a second step, extensive contemporary

sources are exploited to confirm that break dates coincide with events that shaped market sentiment.

The link between expectations regarding the sustainability of public finances and prices

Pamfili Antipa finds that significant changes in the *agio* coincided with events that prompted reassessment of Britain's expected military fate. In particular, unfavourable news – concerning a battle lost by the British, for example – had an inflationary impact, as these made British victory seem less probable and devaluation more likely. Conversely, favourable news caused the pound's purchasing power to increase.

In addition, the nature and timing of certain jumps in the *agio* made it possible to rule out the hypothesis that inflationary tensions were caused by monetary expansion. When Napoleon reascended the throne in March 1815 after having escaped his exile on Elba the *agio* doubled. However, no war-related spending had yet occurred. It was the expectation of future public spending, a fiscal news shock, that affected the purchasing power of the pound.

This analysis, thus, provides evidence on how expectations regarding the sustainability of public finances can affect the price level. In addition, switching from the gold standard to a fiat currency regime, effectively replaced the risk of sovereign default with a risk from inflation. Adjustments in the real value of outstanding debt could now be engineered through devaluations of the currency. In other words, monetary regime choices and their operation shape how people expect debt to be stabilised.

Fiscal consolidation under imperfect credibility

Lemoine (M.) et Lindé (J.) (2016), "Fiscal Consolidation Under Imperfect Credibility", *European Economic Review*, vol. 88, p. 108-141.



Matthieu Lemoine holds a PhD in economics and is the Deputy Head of the Macroeconomic Analysis and Forecasts Division of the Banque de France. From 2002 to 2009, he worked in the French Economic Observatory (OFCE). His research topics focus on fiscal policy, taxation, business cycles and potential growth. He has published articles in the following reviews and journals: *European Economic Review*, *Annales d'Économie et Statistiques*, *Applied Economics*, *Journal of Forecasting*, *OFCE Review*, *Économie et Statistiques*.

“The decomposition supports the notion that credibility is imperfect for some of these economies.”

Matthieu Lemoine and Jesper Lindé examine the effects of expenditure-based fiscal consolidation when credibility is imperfect regarding whether the cuts will be long-lasting. They find two key results. First, in the case of an independent monetary policy, the adverse impact of limited credibility is relatively small, and consolidation can be expected to reduce government debt at a relatively low output cost given that monetary policy provides more accommodation than it would under perfect credibility. Second, the lack of monetary accommodation under currency union membership implies that the output cost may be significantly larger, and that progress in reducing government debt in the short and medium term may be limited under imperfect credibility.

No significant changes in the debt ratios of the peripheral euro area economies despite sizeable fiscal consolidation plans

The global financial crisis and ensuing slow recovery have put severe strains on the fiscal positions of many industrial countries, especially those of many peripheral economies in the euro area. Mounting concern about high and rising debt levels, especially in the wake of the rise in borrowing costs, spurred efforts to implement sizeable fiscal consolidation plans. So far, many of the fiscal consolidation plans that have received legislative approval in the

peripheral euro area economies and appear to have broadly similar common features – they have typically been fairly front-loaded and more oriented towards spending cuts than tax hikes. However, despite significant consolidation efforts, the debt ratios of peripheral economies have not improved much, except in Ireland, although deflation has largely been avoided (except in Greece). Hence, the evolution of debt and output during this period does not seem to support the popular policy recipe – notably advocated by Alesina and Ardagna (2010) – that large spending-based fiscal consolidations have expansionary effects on the economy.

Analysis of the impact of imperfect credibility of announced consolidation efforts on the output cost of fiscal austerity

Matthieu Lemoine and Jesper Lindé seek to analyse the impact that imperfect commitment of announced consolidation efforts has on the output cost of fiscal austerity and on the effectiveness in reducing debt/GDP ratios in the short and medium term. Given the sizeable consolidation plans, they believe that both households and investors may have had considerable doubts about the ability of politicians to follow through on their implementation. In addition, Matthieu Lemoine and Jesper Lindé look for understanding how these doubts may have affected their efficiency. In order to assess whether imperfect credibility

is empirically important, they decompose data on government spending (as a share of trend output) into permanent and temporary components for a selected set of peripheral euro area economies. This decomposition supports the notion that credibility is imperfect for some of these economies. In particular, Matthieu Lemoine and Jesper Lindé show that credibility for permanent spending cuts is impaired for Greece.

Consolidation could still reduce government debt at a relatively low output cost

Matthieu Lemoine and Jesper Lindé's main findings are as follows. First, under independent monetary policy, the adverse impact of limited credibility is relatively small, and consolidation can still be expected to reduce government debt at a relatively low output cost given that monetary policy provides more accommodation than it would under perfect credibility. Second, the lack of monetary accommodation under currency union (CU) membership implies that the output cost may be significantly larger under imperfect credibility, suggesting that progress in reducing government debt in the short and medium term is limited when the consolidation is implemented quickly. For a small CU member, a gradual approach to consolidation has the dual benefit of mitigating the need for monetary accommodation and building credibility over the permanence of the cuts more quickly.

Precautionary saving and aggregate demand

Challe (E.), Matheron (J.), Ragot (X.) and Rubio-Ramirez (J.), "Precautionary saving and aggregate demand", *Quantitative Economics*, forthcoming.

Julien Matheron is a Research Advisor at the Directorate of Monetary and Financial Studies. Before this, he was the Head of the Monetary Policy Division. His research interests focus mainly on macroeconomics and monetary economics. He has published extensively in peer-reviewed journals such as *Quantitative Economics*, the *Economic Journal*, the *Journal of Money, Credit, and Banking*, the *Review of Economic Dynamics*.

“Time-varying precautionary savings also have an aggregate supply effect that tends to reduce, aggregate volatility.”

A common feature of medium-scale New Keynesian models is the assumption of perfect insurance against idiosyncratic income shocks. The reason for this is that imperfect insurance typically generates enormous ex post heterogeneity among agents, which existing solution methods cannot handle without drastically restricting the set of aggregate shocks and endogenous state variables. As a consequence, imperfect-insurance models cannot be estimated by maximum likelihood. Rather, they are calibrated by some method of moments using only a subset of the moment conditions. In their paper, Edouard Challe, Julien Matheron, Xavier Ragot, and Juan Rubio-Ramirez formulate a medium-scale, New Keynesian dynamic stochastic general equilibrium model with imperfect insurance. The model is formulated in such a way that heterogeneity is finite-dimensional in equilibrium.

Combining micro and macro data at the estimation stage

Incidentally, one attractive feature of this approach is to make it possible to include the time-series dimension of cross-sectional information into the likelihood estimation of the model, in addition to the usual macro and monetary time series. While household-level data have routinely been used to calibrate imperfect-insurance models, this information has not yet been used as observable variables when estimating medium-scale New-Keynesian models. Challe, Matheron, Ragot, and Rubio-Ramirez push this approach

further by using quarterly household-level data on consumption dispersion at the estimation stage, in addition to lower-frequency household-level data at the calibration stage.

Illustration based on households' behaviour regarding the use of precautionary saving

Challe, Matheron, Ragot, and Rubio-Ramirez illustrate their approach by focusing on the way households' precautionary saving behaviour against unemployment risk propagates aggregate shocks. To capture the main channels by which precautionary saving may affect outcomes, the framework combines three basic frictions: i) nominal rigidities (in prices and wages), ii) labour market frictions, and iii) imperfect insurance against idiosyncratic unemployment risk. All three frictions are known, even in isolation, to capture some important features of the business cycle. Importantly, their interactions give rise to a feedback loop between precautionary savings and aggregate demand: following aggregate shocks that lower demand, job creation is discouraged, unemployment persistently rises, and hence so does idiosyncratic unemployment risk.

Imperfectly-insured households rationally respond to this rise in idiosyncratic unemployment risk by increasing precautionary wealth, thereby cutting consumption and degrading demand even more. This aggregate demand effect of time-varying precautionary savings is, however, usually not the only one at

work in economies with imperfect insurance. Time-varying precautionary savings also have an aggregate supply effect that tends to reduce, aggregate volatility. Indeed, in a typical recession, as unemployment risk rises, imperfectly-insured households save more than they would if they were perfectly insured.

These additional savings lower the equilibrium interest rate relative to the perfect-insurance benchmark, which tends to limit the contraction in investment and the capital stock. The aggregate supply effect of precautionary savings against unemployment risk thus tends to smooth fluctuations in investment, capital and ultimately output. Hence, in the presence of both the aggregate demand and supply effects of precautionary savings, determining which effect dominates, and hence whether time-varying precautionary savings ultimately make the economy more or less responsive to aggregate shocks, becomes an empirical question. The framework proposed by Challe, Matheron, Ragot, and Rubio-Ramirez allows them to incorporate both effects and to measure their relative strength from the data.

Strong evidence of a powerful feedback loop between idiosyncratic unemployment risk and consumption demand...

Once the joint posterior distribution of the structural parameters of the model has been recovered, Challe, Matheron, Ragot, and Rubio-Ramirez ask: has the precautionary motive been a factor in the

propagation of the recent US recessions, including the Great Recession? In these instances, has the aggregate demand effect dominated the aggregate supply effect, making the precautionary motive inherently destabilising?

To answer these questions, the authors extract the aggregate shocks that affected the US economy during these periods and then feed them into a counterfactual perfect-insurance

model - wherein the precautionary motive due to imperfect insurance is not present by construction.

For the Great Recession, the authors find evidence of a powerful feedback loop between idiosyncratic unemployment risk and consumption demand, so that the aggregate demand effect largely dominates the aggregate supply effect (not only does the precautionary motive significantly

amplify the fall in aggregate consumption, the latter also feeds back to adverse labour market conditions). They find qualitatively similar, though quantitatively less significant, amplification effects during the 1990-1991 recession. In contrast, they find no evidence of strong aggregate demand effects during the 2001 recession; if anything, the supply effects dominate the aggregate dynamics (that is, there is less aggregate volatility with the precautionary motive than without).

The Directorate General Economics and International Relations (DGEI) is a Directorate General of the Banque de France. Its task is to contribute to the preparation of monetary policy decisions by conducting macroeconomic analyses and research work.

The Research Newsletter BDF eco is published by the DGEI. If you want to respond to this letter, you can write to the following address: labolog@banque-france.fr

Research Newsletter BdF eco

Editorial: **Marc-Olivier STRAUSS-KAHN**

Editor: **Sanvi AVOUYI-DOVI**

Assistant: **Françoise CORTONDO**

Production: **Press and Communication Department**



<https://publications.banque-france.fr/en/liste-chronologique/research-newsletter>
<https://blocnotesdeleco.banque-france.fr/en>

