

A sectoral net lending perspective on Europe

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Abstract

The paper investigates net lending and net borrowing flows of the institutional sectors in Europe since the introduction of the Euro in 1999. Applying a simple statistical apparatus, this paper is novel in describing the sectoral behavior leading up to and during the crisis. We find that (1) many countries of the Northern group were characterized by low public deficits or even budget surpluses, current account surpluses and a private sector in a net lending position. In countries of the Southern periphery, in the Anglo-Saxon countries as well as in many Eastern European Economies private sector net borrowing coincided with a budget deficit and substantial current account deficits. (2) With the onset of the crisis private net lending soared in all countries while all governments incurred deficits, consistent with the notion of a *balance sheet recession*. (3) In all countries private net lending is procyclical reinforcing the economic downturn, while public net lending is countercyclical (4) Household net lending tends to lead the business cycle, while corporate net lending tends to lag it especially in the Northern group. (5) Prominent theories reading causalities into mirror-imaged behavior of sectoral net lending, such as *Ricardian Equivalence* and the *Twin Deficit Hypothesis* are not supported by the data.

Key Words: net lending, net borrowing, Euro crisis, Ricardian equivalence, twin deficit, current account imbalances

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1 Introduction

The macroeconomic behavior of the institutional sectors is one of the main questions in economics since the invention of the system of national accounts by Richard Stone and James Meade in 1941 (Great Britain Treasury, 1941), a system eventually tracing back to John Maynard Keynes' (1936) elaboration that aggregate saving is equal to aggregate investment³, or put differently, that national income can be identified with national output. The crucial role of net lending and net borrowing flows in this respect was brought back on the table by Godley and Cripps (1983).

Many economic theories as well as policy recommendations after the crisis implicitly make assumptions about this sectoral behavior, manifesting in the net lending and net borrowing flows of households, non-financial corporations, financial corporations, the government and the rest of the world. These include suppositions about the cyclical behavior of the sectors as well as the postulation of prominent concepts such as the notion of a *Crowding Out* of corporate investment by government spending or *Ricardian Equivalence*. Both ideas latently feature in the calls for austerity. Also policy prescriptions aimed at increasing competitiveness in order to foster growth, assume supply-side factors concerning corporate investment to be the right leverage point to stimulate the recovery rather than measures stimulating household consumption.

The changes in the national accounts introduced with the European System of Accounts 1995, with data encompassing the period between the introduction of the Euro 1999 and the onset of the crisis as well as the *Great Recession* since, allow a new perspective: a statistical analysis of the macroeconomic behavior of the institutional sectors, in particular net lending. Investigating these flows facilitates economic analysis, as they allow to reveal structural problems and relationships between the sectors and guarantee that the adding up-constraints imposed by the *mechanism of net balances*, as coined by Wolfgang Stützel (1978) are not violated.

In the following we set out to describe the developments in sectoral net lending and net borrowing in Europe with an emphasis on four important structurally distinct economies: Germany, France, Spain and Great Britain. After a brief descriptive analysis we apply a simple statistical apparatus to shed light on the cyclicity of net lending flows and reveal the structural relationships between the sectors' net lending and net borrowing.

2 Five sides of one coin – the Euro Crisis from a NLNB perspective

While neoclassical economists have primarily dealt with the Euro Crisis as a sovereign debt crisis caused by lax fiscal policy, and predominantly discussed the impact of sovereign debt on growth (see e.g. Reinhart & Rogoff, 2010), heterodox economists have emphasized current account imbalances (see e.g. Flassbeck & Lapavistas, 2013). Many discussions of the crisis, both mainstream and heterodox, thus implicitly look at the net lending and net borrowing flows of one institutional sector. This however often leads to a one-sided view of the mechanisms at work. Analyzing the

³ These ideas are also found in earlier works of American Institutionalists such as Wesley Clair Mitchell and Colin Clark (Mirowski, 1989) and ultimately go back to Venetian double-entry bookkeeping, invented in the twelfth century and was later in 1494 systematically reviewed in the famous '*Summa de arithmetica geometria proportioni et proportionalita*' by the Italian monk and mathematician Luca Pacioli (Chatfield & Vangermeersch, 1996).

flows of all five sectors together guarantees taking into account ‘all five sides of the coin’ and ensures not to walk into fallacies relating to the *mechanism of net balances*.

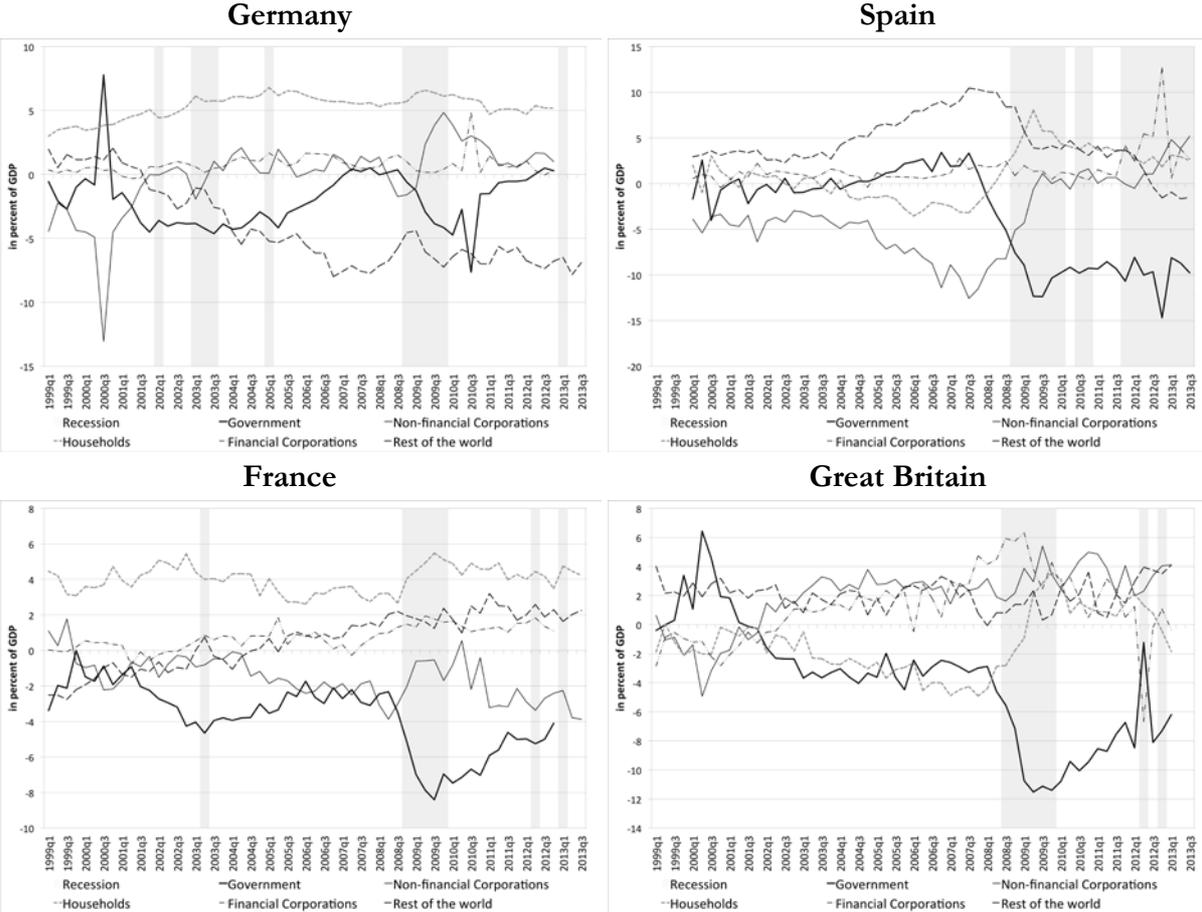
Net lending is the balancing item of the non-financial with the financial accounts⁴ and can be expressed in three ways: as the difference between (1) income Y_i and expenditure E_i , (2) investment I_i and saving S_i and (3) the change of assets ΔA_i and the change of liabilities ΔL_i of a sector i .

$$NL_i = Y_i - E_i = S_i - I_i = \Delta A_i - \Delta L_i = -NB_i$$

It is subject to an adding-up constraint that the financing need of any sector has to be serviced by the overall financing surplus of all other sectors of the economy. The sum of all sectors’ net lending and net borrowing must equal zero.

The figures below show superimposed net lending (+) and net borrowing (-) flows of the institutional sectors for Germany, Spain, France and Great Britain between 1999 and 2013 in percent of GDP. The grey shaded areas indicate periods with negative growth rates of real GDP compared to the same quarter of the previous year. The figures as well as the statistical calculations in the following sections are based on seasonally adjusted data using the X-12 ARIMA additive method (U.S. Census Bureau, 2011).

Figure 1: Net Lending and Net Borrowing of the institutional Sectors in percent of GDP



⁴ The equivalent concept in the financial accounts is ‘net financial transactions’. In the following data from the non-financial accounts will be used due to its consistency with saving and investment. Where not available we will resort to data from the financial accounts, though deviations between the calculations in the two accounts can be substantial. A detailed overview over the data provenance for each country can be found in the appendix.

Looking first at the economy as a whole, it becomes clear that macroeconomic dynamics differ substantially between the countries. Germany has experienced a continuously increasing current account surplus i.e. a net borrowing position of the rest of the world vis-à-vis Germany. Since the fixation of exchange rates in the Euro Area in 1999, it rose to a peak of around seven percent of GDP in 2007, where it has remained since with a short exception in late 2008 and early 2009. In absolute terms these surpluses amount to over 1,5 Trillion Euros between the year 1999 and 2013 (European Central Bank, 2014). In contrast, Spain experienced a mirror-imaged increase in its external deficit from around three percent of GDP in the early 2000s to ten percent in 2008. Since then Spain's current account deficit has decreased as steeply as it rose before, turning into a small surplus in 2013. France is faced with a continuous deterioration of its external balance from a surplus of two percent of GDP at the beginning of the observation period to a deficit of the same magnitude at the end. In Great Britain the rest of the world's net lending floated stably around two percent of GDP since 1999, with only a recent increase to four percent.

Also household net lending reveals structural differences between the economies. While German and French households have been a net lender to the economy with around 5 percent of GDP throughout the entire observation period, in Spain and Great Britain households went into a strong net borrowing position of 3 and 5 percent of GDP up to 2008. With the onset of the crisis households in all four countries drastically improved their balance: in Germany and France by 1 and 2.5 percent of GDP, in Great Britain and Spain by 9 and 11 percentage points respectively. Households have been in a net lending position since⁵.

The non-financial corporations' net lending exposes interesting patterns. In Germany the non-financial corporations shifted from a net borrowing position during the early 2000s to a roughly balanced account for most of the observation period. Similar holds true for Great Britain where non-financial corporations have experienced a surplus of 2 to 4 percent of GDP since. In Germany with the onset of the crisis the non-financial corporate sector incurred substantial surpluses, declining again in 2011. Also in France the non-financial corporate sector's balance soared during the crisis, though it remained in a net borrowing position. In Spain the net borrowing of the non-financial corporations increased up to 12 percent of GDP before the crisis, when it abruptly declined. Now Spanish corporations are in a net lending position of 5 percent of GDP, after exposing a balanced account for several years.

The financial corporations play a limited role, though in general making small surpluses, except for Great Britain where the surpluses amount to a maximum of 6 percent of GDP before the crisis. Singular outliers can be observed during the turbulent time of banking packages in Germany and Spain where the financial corporate sector experienced a one-quarter surge in its net lending with a mirror-imaged surge of the government deficit. The same holds true for Great Britain with reversed signs.

The public deficit i.e. government net borrowing is at the center of the current debate. In Germany the government sector has experienced government deficits for most of the period, especially during the early 2000s and the first years of the crisis. Exceptions are the 3rd quarter 2000, the years before the crisis where the account was roughly balanced as well as the small surpluses the

⁵ Very recently households in Great Britain went in a net borrowing position of two percent of GDP again.

government sector in Germany is currently accruing. France faced public deficits of up to 4 percent of GDP before the crisis, during which deficits rose to a peak of 8 percent, gradually declining since. In Great Britain the government was still in a net lending position during the early 2000s. Since then deficits increased up to around 3 percent of GDP before the crisis and jumped to over 11 percent in 2009. In 2013 the deficit was down to around 6 percent of GDP again. Very interesting in this context is the case of the crisis-struck Southern periphery country Spain. The Spanish government's balance was roughly balanced until 2004 when the government started to shift into a net lending position, making a surplus of over 3 percent of GDP at the peak in 2007. When the crisis hit, the government balance deteriorated sharply. With essentially all other sectors being in a net lending position, the Spanish public deficit has been around 10 percent since.

In general a structurally offsetting relationship between the private sector and the public sector is observable, with public deficits rising when the private sector increases its net lending. In Germany and France this mirror-imaged behavior of the public sector is exhibited in particular with the non-financial corporate sector, in Great Britain it is most pronounced with the household sector, while in Spain the relationship with both households and non-financial corporations seems to be strong. In Spain also current account and the other sectors' balance seem to be associated, with co-movements of foreign and government net lending, and mirror-imaged movements of private net lending.

The observation of a growing polarization of the external accounts between the Euro Area countries Germany, France and Spain since the introduction of the Euro on the one hand and a stable external deficit of the non-member of the currency area Great Britain on the other hand lends support to arguments that the roots of the Euro Crisis can be found in a flawed architecture of the common currency union in combination with divergent unit labor costs and inflation rates (see for instance Flassbeck & Spiecker, 2011; Horn, Joebges, & Zwiener, 2009) The present dynamics of high household net lending in Germany and household net borrowing in Spain and Great Britain are also consistent with the notion of a debt-driven growth regime in Spain and Great Britain, and an export driven growth regime in Germany (Stockhammer, 2012) pursued as a result of the gap in domestic demand caused by a decreasing wage share. They are also supportive of the criticism of the dominant 'one size fits all' policy stance in Europe. According to this view low interest rates, which while sustainable for the German economy, further nourished the debt-driven boom for houses and durable consumer goods in countries like Spain. These started a self-reinforcing cycle of increasing demand, increasing real estate prices, and increasing debt, tolerated or even welcomed by banks and governments as they enjoyed a boom in profits, job creation and even budget surpluses (R. Boyer, 2013). This is reminiscent of Minsky's (1986) observation that businesses accumulate debt in boom phases, provoking speculative bubbles, which bursts when the *Minsky moment* comes and the they are unable to service its debt.

2.3 Rebalancing, Deleveraging and Austerity - Surges in private net lending und public net borrowing

As briefly discussed above, the figures show that when the crisis hit the private sector's net lending soared. In Germany mostly the non-financial corporate sector was affected, in Great Britain mostly the household and the financial corporate sector, while France and Spain experienced surges in both household and corporate net lending. The drastic increases in the balances of both households

and the corporate sector went hand in hand with a precipitously increasing government deficit in all countries and a continuous reduction of the external deficit in most deficit countries.

These mirror-imaged rises in private net lending and public net borrowing are observable in all EU countries. The following table shows the mean value of government, private and foreign net lending and net borrowing for the period prior to the crisis (2004q1-2008q2) and after the Lehman crash (2008q3-2013q1).

Table 1: Net Lending of the Government, the Private sector and the Rest of the World before and after the Lehman crash.

	Government		Private		Rest of the world	
	2004q1 - 2008q2	2008q3 - 2013q1	2004q1 - 2008q2	2008q3 - 2013q1	2004q1 - 2008q2	2008q3 - 2013q1
AT	-1.4	-3.0	4.8	5.4	-3.4	-2.3
BE	-0.8	-3.8	4.5	4.6	-3.7	-0.8
CZ	-2.3	-4.2	-0.9	2.7	3.2	1.5
DE	-1.9	-1.8	7.9	8.0	-6.0	-6.3
DK	4.1	-2.2	-1.2	7.2	-2.9	-5.0
EA	-1.8	-4.7	2.0	4.8	-0.2	-0.1
EE	1.9	-0.9	-13.7	3.4	11.7	-2.5
ES	1.0	-9.6	-8.6	6.2	7.6	3.5
FI	3.9	-1.7	0.8	1.9	-4.7	-0.3
FR	-2.9	-6.0	2.2	3.8	0.7	2.0
GB	-3.2	-8.4	1.3	6.3	1.9	2.1
GR	-7.0	-11.2	-5.1	1.7	12.2	9.5
HU	-6.9	-2.1	-1.6	2.1	8.6	0.0
IE	0.6	-15.1	-4.4	15.3	3.3	-0.2
IT	-3.2	-3.9	2.1	1.7	1.1	2.3
LT	-0.6	-6.0	-6.7	6.9	7.4	-0.9
NL	0.2	-3.9	7.3	9.3	-7.5	-5.4
PL	-3.5	-5.8	-0.3	3.3	3.9	2.4
PT	-4.3	-7.6	-4.5	1.2	8.7	6.3
SE	2.2	-0.2	5.1	7.2	-7.6	-7.0
SI	-1.2	-5.5	-2.7	5.5	3.3	0.0
SK	-1.3	-5.0	-5.7	0.4	7.0	4.6

In a third of the countries governments experienced a budget surplus before the crisis, including the Scandinavian countries, the Netherlands, Ireland, Estonia and Spain. The private sector in this period was in a net lending position in predominantly in countries usually attributed to the ‘Northern’ group (AT, BE, DE, FI, NL, SE) as well as in France, Great Britain and Italy. The private sector was a net borrower to the economy predominantly in countries of the ‘Southern Periphery’ (ES, GR, PT) as well as the Anglo-Saxon countries (IE, GB) and many Eastern European economies (CZ, EE, HU, LT, PL, SI, SK). Denmark is the only Northern country in this category. Looking at the external sector, drastic imbalances are visible with external deficits of 12.2 percent of GDP on average in Greece and a surplus of 7.5 percent in the Netherlands or 6 percent in Germany. It is noticeable that all countries in which the private sector made a surplus accrued current account surpluses and vice versa except for France, Great Britain, Italy and Denmark.

This picture dramatically changed during the *Great Recession*. The balance of the private sector soared in (nearly) all countries⁶ and between 2008q3 and 2013q1 the private sector was on average in a net lending position in all countries. Associated was a steep rise in the public deficit in all

⁶ In Italy it decreased slightly but remained positive.

countries except for Hungary and Germany. The private sector thus reinforced the economic slump by withdrawing demand and increasing its net lending, while the government sector anti-cyclically offset this private behavior. The polar external balances converged, predominantly through adjustment in the deficit countries, imbalances however still remain.

The surge of private net lending is on the one hand explicable by banks tightening their lending standards after the crash so that even solvent companies and households were unable to get credit as Minsky (1986) predicts to be the case during a financial crisis. On the other hand the behavior of the private sectors supports the notion of a *balance sheet recession* as coined by Koo (2008), who brought the crucial role of balance sheet positions back on the table.

Contrary to an ordinary recession, such a 'lost decade' recession, according to the author, is characterized by the fact that many agents in the private sector are minimizing debt instead of maximizing profits following the bursting of an asset price bubble, because households and businesses have to increase savings to pay down debt, as the liabilities remain high although asset prices plummeted. This, in turn, reduces aggregate demand. During this special type of recession, people with high debt are reluctant to borrow regardless of the prevailing interest rate, even if it is almost zero, as is typically the case in the liquidity trap. This behavior reduces investment and consumption demand and may even lead to a deflationary spiral. Gächter, Geiger, Glötzl & Schuberth (2015b) show that the investment and saving behavior of the private sector follows patterns consistent with such a *balance sheet recession*, especially in the crisis-struck periphery of Europe. In a vicious circle, companies have been hoarding cash since the crisis and now have little prospects for profitable investment as the overall economic situation remains in a slump, caused in part by their own behavior (Gordon, 2015). Micro-data evidence on corporate investment confirms this observation (Gächter, Geiger, Glötzl, & Schuberth, 2015a; Task Force of the Monetary Policy Committee of the European System of Central Banks, 2013).

Taking into account the efforts of governments to reduce their deficit, the situation is reminiscent of a version of the Keynesian *paradox of thrift*. In a similar vein, already in 1933, Fisher argued that the efforts of debtors to decrease their debt by saving more will actually increase the debt burden on them due to the deflation they cause. When over-indebtedness depresses prices faster than liquidation these efforts push the economy into a vicious debt deflation spiral.

3 Net Lending and Net Borrowing and the Business cycle

In the previous chapter the cyclicity of net lending series of the institutional sectors has been touched upon and discussed descriptively. In this section we will go further and apply a simple statistical apparatus to identify important structures in the behavior of the economic sectors over the business cycle. The analysis follows the approach of Barbosa-Filho et al. (2008) and is based on the adding-up constraint that the sum of net lending and net borrowing flows has to equal zero.

The covariances between the net lending series, normalized by GDP, and six leads and lags of capacity utilization, as an indicator for the business cycle, are investigated. As laid out in the statistical online appendix, the sum of the covariances of the net lending of the institutional sectors with capacity utilization at any lead or lag must equal zero. Covariances as such can however not

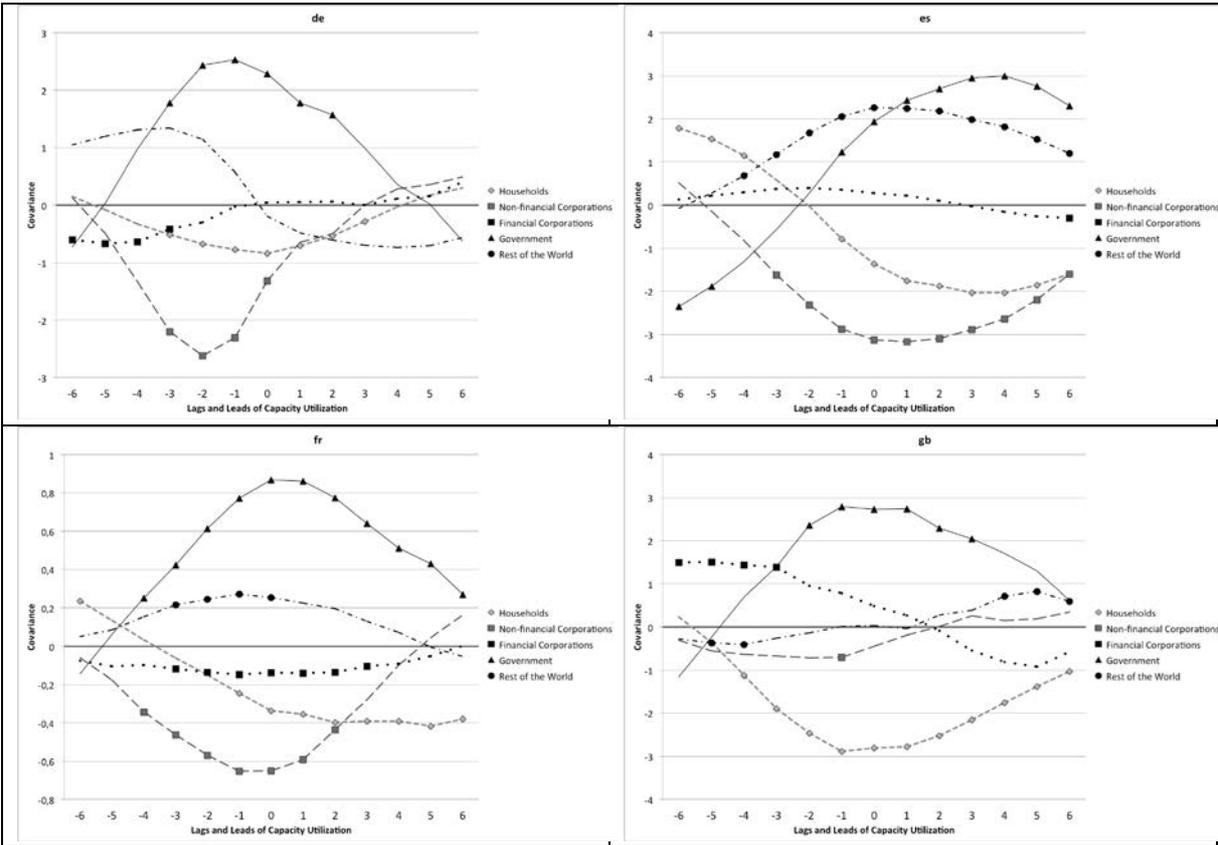
be evaluated as significant or not. Therefore the associated correlation coefficients, where the statistical calculation of significance levels is possible, are calculated additionally.

Following Barbosa-Filho et al. (2008) capacity utilization (standardized to 0) is approximated as:

$$Capacity\ Utilization = \frac{Real\ GDP - Trend\ Real\ GDP}{Trend\ Real\ GDP} \times 100$$

, where Trend Real GDP is calculated using the Hodrick & Prescott (1997) filter. The figures below illustrate the covariances of net lending with dated levels of capacity utilization. A negative covariance indicates a pro-cyclical net lending behavior of a sector, in the sense that it reinforces the business cycle. A positive covariance, as mostly observed for the government sector, indicates a counter-cyclical behavior such that the net lending behavior dampens the business cycle. Turning to the x-axis, the left side of the x-axis value 0 (the current values of capacity utilization) shows the covariance with lags of capacity utilization, the right side the covariance with leads of capacity utilization. A marker indicates a significance of the associated correlation coefficient at the 10 percent level.

Figure 2: Covariances between Net Lending and Net borrowing and Leads and Lags of Capacity Utilization



Analyzing covariances rather than correlations allows an interesting perspective as at any lead or lag of capacity utilization the sum of the covariances has to equal zero. The cyclicity of the flows can therefore be interpreted as directly offsetting each other. While this analysis does not allow for final conclusions it enables us to reveal certain tendencies in sectoral behavior.

In all four countries government net lending’s covariance with the cycle is strongly positive, indicating a counter-cyclical behavior in line with the observations made in the sections above. In Germany government net lending is offsetting all other sectors at current levels of capacity

utilization, where the biggest counterpart are the non-financial corporations followed by households. Both behave procyclically, net borrowing more during the boom than during economic downturns. The rest of the world plays a secondary role, financial corporations' net lending's covariance is only relevantly negative for lags of capacity utilization. The picture is similar in France with the difference that, while still of smaller magnitude, the rest of the worlds' net lending is positively associated with the business cycle and the financial corporations' net lending is negatively associated with the cycle and thus procyclical. In Spain the government and the rest of the world exhibit an equally strong positive covariance with capacity utilization at the zero lag, while also here the private sectors behave procyclically, the corporate sector to a larger extent than households. Financial corporations' net lending seems to be largely acyclical. The greater importance of the sector rest of the world is consistent with the real estate boom prior to the crisis, which led both to decreasing net lending of the private sector and to increases in the rest of the world's balance, due to the increase in demand. Great Britain differs from the other countries in that at current levels of capacity utilization government and household net lending's covariances are offsetting each other almost entirely. The other sectors are of minor importance, only at lags of the cycle financial corporations' net lending is importantly positively associated with the cycle.

These observations are consistent with Steindl's analysis (1990, Chapter 14) that while the conventional view, expressed in the *Ricardian Equivalence* framework, would assume that net borrowing of households would further increase in a crisis in order to be able to keep the consumption level stable, it is more plausible that households will buy significantly less durable consumer goods and reduce residential investment. These are mainly debt financed and make up a significant part of total expenditure. According to Steindl the change in demand for these goods will react more than proportionally to changes in disposable incomes as such goods are psychologically similar to the procyclical corporate investment (Keynes 1936) in that they are fundamentally dependent on expectations for the future.

Turning to the sequence of sectoral net lending and the business cycle, Table 2 gives an overview the tendencies present in the data of which sectors lead and lag capacity utilization, i.e. whether net lending is more strongly and significantly associated with leads or lags of capacity utilization⁷. As a means to check the robustness the calculations were also conducted for alternative business cycle indicators estimated using a Butterworth high-pass filter and the Christiano & Fitzgerald (2003) filter on real GDP. In the table an asterix indicates a shift in the sequence in one of the robustness checks, though there are no sign changes from procyclical to countercyclical or vice versa. Also changes of the sequence in the robustness checks are only observable between current levels of capacity utilization and either leads or lags. There are no shifts from lead to lag or the reverse.⁸

⁷ The countries for which data from the financial accounts was used are omitted, as their strongly erratic volatility would yield distorted results.

⁸ In the online appendix the covariances of sectoral net lending with the three different business cycle estimations and the significance of the associated correlations (a solid line indicates a significance at the 10 percent level) are illustrated graphically.

Table 2: Net Lending of the institutional sectors over the cycle⁹

	Households	Non-financial Corporations	Financial Corporations	Government	Rest of the World
CZ		Lead		Lead	
DE	o	Lag	Lag	Lag	
DK	Lead	Lag	Lead	o	Lag
EA	Lead	Lag		o	Lag
ES	Lead	o		Lead	o
FI	o	Lag		o	
FR	Lead	o	o	o	Lag*
GB	Lag*		Lag	Lead*	Lead
GR		Lead	Lag		Lead
IE	Lead	Lag	Lag	Lead*	Lag
IT		Lag		o	
NL	o*		Lag	o*	Lead
PL	Lag*	o	Lag	Lead	Lead*
PT	Lead*	o*			Lead
SE	Lead	Lag		Lag*	
SI	o*	o	o*	Lead	o*

Lead	<i>Net Lending leads capacity utilization</i>
Lag	<i>Net Lending lags capacity utilization</i>
o	<i>Covariance of Net Lending peaks at current levels of capacity utilization</i>
	<i>No clear, significant pattern observable</i>
	<i>Negative Covariance - Pro-cyclical Net Lending</i>
	<i>Positive Covariance - Counter-cyclical Net Lending</i>
*	<i>Unstable in one of three specifications of the robustness check</i>

Household net lending on the one hand tends to lead the cycle where a significant relationship with the business cycle is observable or exhibits highest covariances with the current values of capacity utilization. Household net lending thus tends to decrease prior to a boom phase, or increase before an economic downturn. The cycle is, so to say, household net lending driven or put differently household net lending ‘Granger causes’¹⁰ output movements statistically, as covariances are highest between household net lending and leads of capacity utilization.¹¹ Barbosa-Filho et al. (2005, 2008) find similar results for the United States. Exceptions are Great Britain and Poland where highest covariances between household net lending and capacity utilization are observable at lags of the cycle. For both countries in another specification of the cycle variable covariances are highest with current values.

9

FR	<ul style="list-style-type: none"> • RoW is insignificant in the two alternative specifications 	PL	<ul style="list-style-type: none"> • RoW shifts from Lead to o in one specification • HH shifts from Lag to o in one specification
GB	<ul style="list-style-type: none"> • HH shifts from Lag to o in one specification • Gov shifts from Lead to o in one specification 	PT	<ul style="list-style-type: none"> • HH shifts from Lead to o in one specification • Cor shifts from o to Lag in one specification
IE	<ul style="list-style-type: none"> • Gov shifts from Lead to o in one specification 	SE	<ul style="list-style-type: none"> • Gov shifts from Lag to o in one specification
NL	<ul style="list-style-type: none"> • HH is insignificant in the two alternative specifications • Gov shifts from o to Lag in one specification 	SI	<ul style="list-style-type: none"> • HH shifts from o to Lead in one specification • Fin shifts from o to Lag in one specification • RoW shifts from Lead to o in one specification

¹⁰ The Granger causality test was first proposed by Granger (1969) arguing that a good measure for causality in economics the predictive power of past values of a time series for another time series’ future values. While such a test of timely sequence is not able to establish ‘true’ causality it said to be an indicator for predictive causality. The conducted analysis in practice is very similar to the test proposed by Granger.

¹¹ Evidently to establish direct causality a significantly more sophisticated model would be necessary.

Non-financial corporations' net lending on the other hand lags the business cycle in many countries, especially in the 'Northern' group. For instance in Germany, Denmark, Finland and Sweden as well as in Italy, Ireland and the Euro Area as a whole the corporate sector exhibits this behavior. The corporate sector thus starts to increase its net borrowing only with a certain time delay after the economy enters a boom phase, consistent with investment being dependent on expectations which are strongly influenced by the current level of economic activity. In all of these countries, with the exception of Italy and the Euro Area (17), the corporate sector is atypical in that it was in a net lending position for most of the observation period, even before the crisis.

The financial corporate sector's net lending exhibits small covariances with both leads and lags of capacity utilization and is acyclical in that no clear cyclical pattern is observable or lagging the cycle in many countries. In the instances where this is the case it is predominantly negatively correlated with output and lags the cycle, similar to the behavior of the non-financial corporate sector. Much of the observable cyclicity is related to the moment of banking rescue packages with respect to the cycle.

Government net lending is countercyclical in all countries and more strongly leads than lags the cycle in the Eastern economies of the sample i.e. Slovenia, Poland and the Czech Republic as well as in Spain and, Great Britain and Ireland. In all economies of the Northern group government net lending either lags the cycle (Germany, Sweden)¹² or shows the highest covariances with current levels of the business cycle variables (Finland, Denmark, Netherlands).

Foreign net lending is positively associated with the cycle in all countries (except for the Netherlands), as expected from imports increasing during the boom phase causing external surpluses to shrink and deficits to increase. In Great Britain, Greece, Portugal, Poland and the Netherlands, foreign net lending more strongly leads the cycle than lags it. It is most important in magnitude for Greece, where it is the only strongly positively associated variable with the business cycle and offsets the procyclical corporate net lending. Also as in Portugal, another Southern periphery country which has experienced large external deficits over the last 15 years, foreign net lending plays a substantial role in the business cycle.

The offsetting movements of net lending and net borrowing flows touched upon in this have been a central object of interest in many prominent theories. In the following these theories including the *Twin Deficit Hypothesis* and *Ricardian Equivalence* will be evaluated empirically.

4 Ricardian Equivalence, Twin Deficits, or Keynes?

Especially offsetting movements of government and private net borrowing have not only been observed since 2008, but are present over the entire observation period. This superficially seems to support *Ricardian Equivalence* as well as notions of *Crowding Out*, which refers to the displacement of private economic activity by public economic activity (Blanchard, 2008) and is often brought up with respect to government borrowing (Buiter, 1977). These concepts still constitute a theoretical backbone of the austerity programs as well as claims about expansionary fiscal contractions (Robert Boyer, 2013). *Ricardian Equivalence* was proposed by Barro in his paper „Are government bonds net

¹² As well as in Portugal

wealth?” in 1974, though originally going back to the works of Ricardo (Ricardo, 1820). The proposition is that (in a neoclassical setting with perfect capital markets, perfect information, rational expectations, etc.) consumers internalize the government’s debt decisions in their consumption and saving behavior and that an increase in government net borrowing will therefore cause an increase in private net lending, as they anticipate that they will have to pay higher taxes in the future. The implicit assumption is that households smooth their consumption, a notion also expressed in many consumption theories such as Duesenberry's (1949) ratchet effects, Modigliani & Brumberg's (1954) life-cycle model and Friedman's (1957) permanent income hypothesis and the later Real Business Cycle literature¹³.

Government net lending is countercyclical as deficits decrease with rises in capacity utilization, as expected from a traditional Keynesian perspective. Both corporate and household net lending are however procyclical and thus appear not to smooth their expenditure over the cycle.¹⁴ Causality may therefore run in the opposite direction than predicted by *Ricardian Equivalence*. Private net lending may be the active part, ‘causing’ public deficits. In a Keynesian analysis such a situation would stem from autonomous variations of investment due to animal spirits (Keynes, 1936) and uncertainty induced changes in the propensity to spend. Counter-cyclical fiscal policy, i.e. deficit spending, would compensate swings in private sector net lending. This behavior can also be empirically observed as all countries (except Greece) display a positive correlation between public net lending and capacity utilization. Thus, as alluded to earlier, in a situation where the private sector chooses to increase its net lending due to animal spirits or uncertainty, the government cannot directly control its own deficit. “[...] The budget gives way more easily than the other sectors in the modern conditions of built-in stability” (Steindl 1990, Chapter 14, p. 197), namely the automatic stabilizers both on the revenue and the expenditure side. However, even without these automatic stabilizers the government forcibly faces a deficit if it does not change tax regulations. When the private sector reduces its expenditure and thus increases its net lending, the government can keep up its expenditure and run a deficit due to the lower revenues caused by the private sector reduced spending. Alternatively it can decrease its spending causing an even further drop in revenues and thus ultimately also a deficit - at a lower level of production. This produces the same pattern as expected in *Ricardian Equivalence*, but with reversed causality. While this may seem to depart from Keynesian ideas it is the mere result of changed circumstances. Keynesians used to speak of budget deficits deliberately, along the notion of deficit spending or purposeful action to decrease unemployment. In the view presented here however, a budget deficit emerges more passively and, as Steindl puts it, has to be “[...] endured like wind and rain” (Steindl 1990, Chapter 15, p. 212).

The Twin Deficit Hypothesis constitutes another prominent theory aimed at explaining the structural relations between net lending flows. It asserts that, under the assumption that all resources are fully employed and the domestic price level is tied to foreign prices by arbitrage in foreign trade, a higher fiscal deficit will spill over into a larger external deficit through higher

¹³ The idea was also already present in Keynes’ works (Keynes & Henderson, 2013) under the name ‘diversion’ and has been a central topic of discussion in economic policy making for a long time. In the following both theories will be dealt with under the heading of *Ricardian Equivalence*.

¹⁴ While overall expenditure is not smoothed it does seem in fact that households smooth their consumption, however not in favor of higher savings, as suggested in the Ricardian equivalence framework. Similarly Barbosa-Filho et al. (2008) show for the United states that it is offset by changes in taxes rather than saving

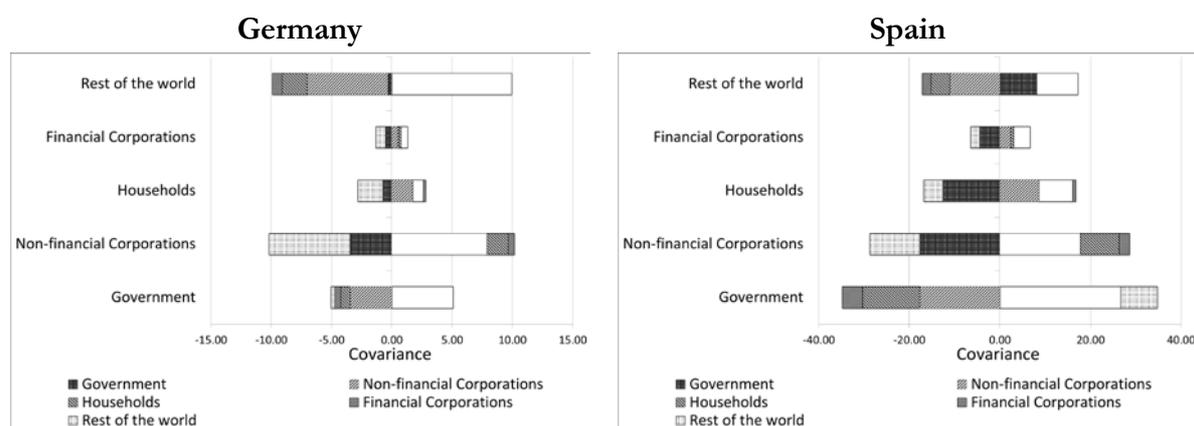
imports, caused by money creation, unless the private sector chooses to reduce its net borrowing. It has its origins in the *Polak Model* developed by the International Monetary Fund (IMF) economist Jacques Polak in 1957 (Polak, 1957) which became the theoretical basis for the IMF Financial Programming and has been imposed on numerous (developing) countries since. The hypothesis was advocated especially during the Reagan presidency in the US by prominent economists such as the former president of the Federal Reserve Bank Paul Volcker (Volcker, 1984) and is still frequently brought up, especially for the United States. From a theoretical perspective the concept's shortcomings are manifold. While the underlying loanable funds framework is problematic, the hypothesis also overlooks the important role of distribution, the independent impact of monetary policy on investment via the interest rate and implies that a public deficit *per se* indicates excess consumption (Blecker, 1992). In consequence, the direction of causality when twin deficits occur has been heavily disputed. For instance Summers (1988) argues that it is governments engaging in 'current account targeting', adjusting their fiscal balance to the circumstances in the external account, which produce co-movements of fiscal and foreign deficits. The table below shows the implied relationships between the sectors' net lending flows.

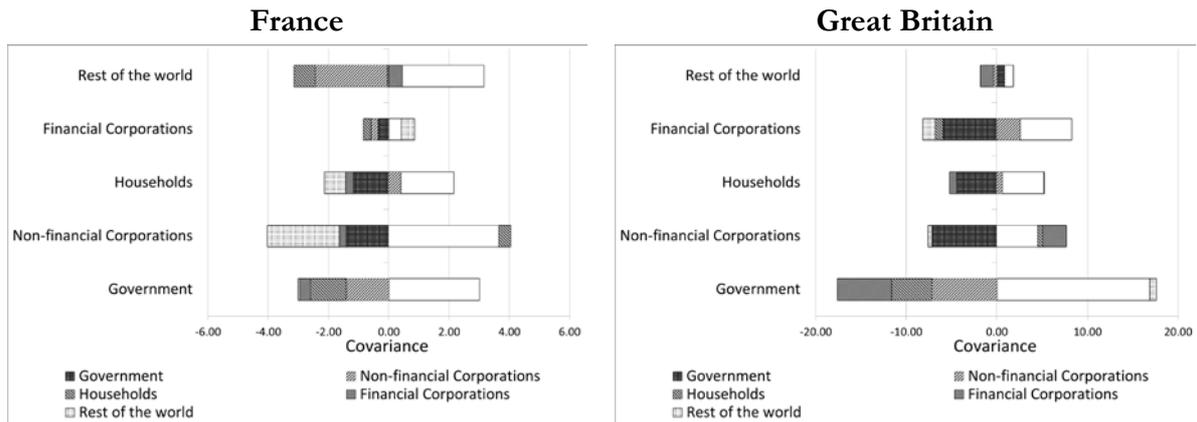
Table 3: Asserted causalities in prominent economic theories

	Twin Deficit Hypothesis	Ricardian Equivalence	Keynesian Uncertainty
Government Net Lending	<i>active</i>	<i>active</i>	<i>passive</i>
Private Net Lending		<i>passive</i>	<i>active</i>
Foreign Net Lending	<i>passive</i>		

In the following the theories introduced above will be evaluated with a simple statistical apparatus following the approach of Barbosa-Filho et al. (2008). The evaluation is based on the statistical attribute of net lending flows that, due to the adding-up constraint to zero, the variance of one sector's net lending must be equal to the negative sum of its covariances with the other sector's net lending. This allows to interpret the covariances as a contribution to the variance of the sector's flows and assess the relations postulated by *Ricardian Equivalence*, *Twin Deficit Hypothesis* or a Keynesian view statistically. The algebraic and statistical apparatus laid out by Barbosa-Filho et al. (2008) is detailed in the appendix. The figures illustrate this decomposition of the variances, where the y-axis denotes the sector whose net lending is under investigation while the patterned areas of the bar represent its covariances with the net lending of the sector as detailed in the legend. The white areas are equal to the variance of the sectoral net lending under investigation.

Figure 3: Covariances between Net Lending and Net Borrowing of the institutional sectors





For all countries in our sample except for Austria, Belgium, Finland and Hungary it can be observed that the variance of government net lending is almost entirely explained by the private sectors, predominantly by the net lending of non-financial corporations and households as illustrated in Table 4. The variance of the earlier, as well as that of household net lending, is explained mostly by the government sector and the rest of the world. The variance of financial corporations' net lending is negligible many countries. In Great Britain, where financial corporations play a greater institutional role, they display the greatest covariance with the government sector. The covariance between the private sectors, especially households and non-financial corporations is positive, while the covariance with the financial corporations alternates in sign between countries.

Table 4: Contributions to the variance of Government Net Lending

	Contribution of Private NLNB	of which			Contribution of Rest of the World NLNB
		HH	NFC	FC	
AT	0.45	-0.35	1.18	-0.38	0.55
BE	0.21	0.07	0.51	-0.37	0.79
CZ	0.95	0.22	0.27	0.45	0.05
DE	0.93	0.15	0.68	0.10	0.06
DK	1.31	0.56	0.62	0.12	-0.31
EA	1.11	0.24	0.66	0.21	-0.11
EE	2.18	0.77	1.11	0.30	-1.18
ES	1.30	0.47	0.66	0.17	-0.30
FI	0.26	0.20	0.04	0.02	0.69
FR	0.98	0.39	0.47	0.12	0.02
GB	1.05	0.26	0.43	0.36	-0.04
GR	1.12	0.12	0.34	0.66	-0.12
H	0.24	0.36	-0.16	0.04	0.76
IE	1.15	0.42	0.17	0.57	-0.08
IT	0.75	0.08	0.53	0.13	0.27
LT	2.35	0.67	1.47	0.20	-1.35
NL	0.59	0.23	0.22	0.14	0.41
PL	1.41	0.13	1.47	-0.18	-0.40
PT	0.92	0.37	0.15	0.41	0.10
SE	0.95	0.43	0.38	0.15	0.07
SI	1.71	0.10	1.28	0.34	-0.72
SK	1.05	0.09	0.92	0.04	-0.05

As suggested above, these patterns superficially coincide with the predictions of *Ricardian Equivalence*. Nonetheless, as shown in the previous chapter, the procyclical net lending and net borrowing behavior of households contradicts the consumption smoothing hypothesis at the core of *Ricardian Equivalence*. For the *Twin Deficit Hypothesis* to be considered as a possible explanation,

covariances between government net lending and foreign net lending need to be negative, as the notion suggests that public net borrowing causes foreign net lending, and substantial in magnitude in comparison to the other covariances of foreign net lending. Evidently, while in Germany and France the covariances are negative but of negligible magnitude they are even positive for the UK and Spain. The *Twin Deficit Hypothesis* can thus be refuted as a possible explanation of the movements of net lending flows in these countries. In fact, for all investigated countries except for Finland and Belgium the foreign-private as well as the public-private connection play a greater role than the foreign-public connection.¹⁵

5 Conclusion and implications for economic policy

Before the crisis European economies differed substantially. On the one hand, in the Northern group (AT, BE, DE, DK, FI, NL, SE) many countries experienced low public deficits or even budget surpluses and also the private sector was in a net lending position while the rest of the world incurred growing deficits. On the other hand, in countries of the ‘Southern Periphery’ (ES, GR, PT) as well as the Anglo-Saxon countries (IE, GB) and many Eastern European economies (CZ, EE, HU, LT, PL, SI, SK), the private sector was a net borrower to the economy. All of these countries experienced current account deficits and except for Spain and Ireland all governments ran deficits. France and Italy took on middle-positions with an average public deficit before the crisis around 3 percent of GDP, small current account deficits and the private sector being a net lender to the economy.

With the onset of the crisis the sectors’ net lending behavior changed dramatically posing similar challenges for all countries. Consistent with Koo’s notion of a *balance sheet recession* the balance of the private sector soared in (nearly) all countries. Between 2008q3 and 2013q1 the private sector was in a net lending position on average in all countries, thereby reinforcing the economic crisis by withdrawing demand, while in all countries the government was now incurring high deficits. The polar external balances converged, predominantly through adjustment in the deficit countries. Imbalances however still remain.

In line with the above observations a statistical investigation of the cyclical behavior of the sectors’ net lending reveals that the private sectors behave procyclically, while the government exhibits a countercyclical behavior and the current account tends to deteriorate during upswings. Moreover, the statistical lead/lag analysis reveals that household net lending on the one hand tends to lead the business cycle in many countries while especially in the ‘Northern’ group the non-financial corporate sector tends to lag the cycle. This finding suggests that policies aimed influencing household behavior are more likely to contribute to a recovery than supply-side measures aiming at stimulating corporate investment as corporate behavior typically tends to lag the business cycle.

Finally, the data contradicts widely accepted concepts such as *Ricardian Equivalence*, which latently feature into current prescriptions of austerity and increasing ‘competitiveness’ are not supported by the empirical facts. In fact a Keynesian analysis, regarding autonomous swings in private net

¹⁵ Half of the countries display positive covariances between the government’s and the rest of the world’s net lending. Within those countries with a negative covariance it is predominantly significantly smaller than the covariance between the government sector and the private sectors. Also in Finland and Belgium the *Twin Deficit Hypothesis* is at least not the only mechanism at work as the private sector is not neutral in terms of covariance as predicted by the Hypothesis.

lending, resulting from changing expectations and uncertainty as the driver of the structural offsetting movement of private and public net lending and net borrowing, is best suited to explain the data.

Recalling these findings stimulating domestic demand especially in the Northern group seems to be a viable alternative to the one-sided austerity policies imposed especially on the Southern periphery. Such a strategy would increase welfare in both country groups, having an expansionary effect on GDP, while also increasing import demand and thereby supporting the periphery countries' recovery process. Moreover, the expansionary effect would produce the necessary leeway for governments to consolidate without risk of a recession. There are several options to increase demand in the surplus countries, though their effectiveness and likeliness of implementation differs resulting from the current economic and political circumstances (see also Glötzl et al. 2014):

(i) A credit-financed expansion of the investment activity by non-financial corporations.

Non-financial corporations are making substantial financing surpluses. In some countries corporations even seek to deleverage to an extent where their credit transactions are negative, thus reducing the absolute amount of debt, in line with Koo's balance sheet recession. Due to mechanisms of the *paradox of thrift* their overall leverage however remains high (Gächter et al., 2015b). In light of the low level of capacity utilization and a situation of liquidity trap with interest rates close to zero in combination with the fact that the non-financial corporations' net borrowing tends to lag the cycle rather than lead it, prospects for this avenue are poor.

(ii) Increased government investment.

Especially in the surplus countries) could boost domestic demand. In light of high public debt levels and national (e.g. German debt brake) as well as the EU (Maastricht) regulations which strongly inhibit the budgetary possibilities, there is little leeway for governments to do so.

(iii) Redistribution to boost demand.

In light of ample evidence on the wage-led nature of the demand regime in Europe (Lavoie & Stockhammer, 2013) a change in the functional income distribution i.e. an increase of the wage share, along with a decrease of the capital share, would reduce the households' savings rate with the aforementioned positive effects. Due to the higher propensity to consume of wage income in comparison to capital income, and taking into account that investment is subdued despite low interest rates, such a measure would have an expansionary effect. The functional income distribution could be influenced through the introduction of minimum wages or a reduction of working time, which would create pressure on wages due to the decreased supply and moreover directly contribute to lowering the high unemployment rates. Such measures are likely to also help to reduce the external imbalances in the Euro Area both through higher unit-labor costs in the Northern economies as well as through higher domestic and thus import demand. Following Kaleckian (1954) thought, a change in the personal income distribution would have similar effects as laid out above¹⁶. The total propensity to save in the economy would be reduced,

¹⁶ Even though Veblen (1899) effects leading to a credit-driven stabilization of or even increases in demand prior to the crisis are well documented, in the current situation with balance sheets under water, it must be assumed that that Kaleckian effect will outweigh.

the propensity to consume increased and thereby an expansionary effect achieved¹⁷. Such an approach seems promising, recalling that households tend to lead the business cycle and offers a wider array of possibilities for policy measures, such as an increase of the taxation of property, property income and top incomes while reducing taxes on labor income and/or increasing social welfare services.

Redistributive measures both within and between factors of production thus can be viable starting points for welfare-preserving solutions to the Euro Crisis. Both would contribute to decreasing the external imbalances in the Euro Area, which are still present but veiled through the general recession, as well as to a decrease in private net lending. Thereby also a reduction of the government deficits would be facilitated. In 1982 Steindl wrote the following about the, at the time, prevailing problems and imbalances. Over thirty years later his description the state of economic policy making is still accurate:

“Today the political basis for such a solution in Europe is present only in some small countries, while the large surplus (creditor) countries on which they depend economically suffer from what you might call a structural anti-Keynesianism. We must not suppose, however, that things always stay what they are. If the economic and financial troubles of our world persist, as I suspect they will, European countries will be forced by instinct of self-preservation to a coordinated full employment policy.” (Steindl, 1990, p. Chapter 16, p. 228)

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¹⁷ A potential reduction of the overall external surplus of the Euro Area and the European Union should not be regarded as a negative effect from an economic policy standpoint, since also for the world economy sustained external surpluses constitute an unsustainable *beggar-thy-neighbor* policy.

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