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Italian Ordinary Statute Regions and Derivatives

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Abstract

Regions are first-level local administrations in Italy. Since 2003, regions have extensively used over-the-counter (OTC) derivatives. Since the use of these derivatives is not clearly regulated, derivatives have been employed to hedge outstanding debt and its costs, but there is evidence that derivatives have also been used to pay current expenses. This study empirically investigates the dynamics the debt of Italian Ordinary Statute Regions and the impact of OTC derivatives during the 2007-2012 period, and the results show that derivatives – as measured by negative market value – have a positive and statistically significant relationship with debt.

Keywords

Derivatives, Italian Regions, Local Public Debt, Financial Management

JEL Classification

H63, H72, H74

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Italian Ordinary Statute Regions & Derivatives

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Regions are first-level local administrations in Italy. Since 2003, regions have extensively used over-the-counter (OTC) derivatives. Since the use of these derivatives is not clearly regulated, derivatives have been employed to hedge outstanding debt and its costs, but there is evidence that derivatives have also been used to pay current expenses. This study empirically investigates the dynamics the debt of Italian Ordinary Statute Regions and the impact of OTC derivatives during the 2007-2012 period, and the results show that derivatives – as measured by negative market value – have a positive and statistically significant relationship with debt.

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Introduction

Over-the-counter (OTC) derivatives are a financial innovation employed by central and local public administrations around the world to hedge outstanding debt and its costs (Giovannini 1997; Piga 2001; OECD 2007). Derivatives can be employed to hedge interest payments on outstanding debt (i.e., flows), where the advantages can be verified only at expiration, and/or derivatives can also be used to restructure outstanding debt, which yields immediate effects. The possibility of postponing revenues and anticipating losses is highly controversial in the public finance literature (Giovannini 1997), also because this practice can translate into a circumvention of debt limitation, as investigated by Granof back in 1984; he argued that “*courts and legislatures bodies must recognize that debt limitations have and will continue to be circumvented, not only by lease-purchases, but also by a wide range of other transactions*” (p.308), and derivatives are an example. Stewart and Cox (2008) refer to the situation before the U.S. Governmental Accounting Standard Board (GASB) Statement No. 53 came into force; their research focuses on the main regulatory improvements but also has useful insights for future research. According to Stewart and Cox (2008), there are 23 state governments and 23 municipal governments that have engaged in derivatives transactions with an aggregate notional value approaching \$32 billion. These governments enter into these transactions primarily to hedge the interest rate and cash flow risks associated with their long-term variable rate demand obligations and their auction rate debt. Moreover, Stewart and Cox (2008) emphasize that governmental “treasurers must develop the necessary expertise and appropriate governance policies to properly structure and monitor debt-related DFI (Derivative Financial Instruments) transactions”. The implementation of GASB

TB 2003–1 by these various state and municipal governments has improved the transparency of their financial statements relative to swaps, swaptions, and other debt-related derivative transactions. Luby and Kravchuck (2013) fill a gap in the literature by describing the use of derivatives by state and local governments in the U.S. over the 2003-2009 period (i.e., before and after the great recession of 2007) to understand the impact that these financial instruments had on the relevant public administrations. This descriptive (not empirical) analysis documents the types of contracts that public administrations underwrite. According to these data, highly indebted and more sophisticated states underwrite more derivatives contracts; states do not underwrite swaps with large sums of money up front because these clauses are not very transparent vis a vis the public. Some states have attempted to foreclose the most expensive contracts but have met with little success.

Some public administrations have filed for bankruptcy due to financial mismanagement involving derivatives contracts. For example, the \$2 billion default by Orange County (California) in 1994 and the \$4 billion default by Jefferson County (Alabama) in 2011 were caused by excessive financial risks (Howell-Moroney and Hall 2011) – and not simply by reduced available local resources (i.e., taxes or investments), as occurred with the city of Detroit. Perignon and Valee (2013) base their study on proprietary data from French local governments and show that politicians strategically use derivatives (such as toxic loans, i.e., loans with a long maturity, low interest rates in the first few years, higher rates afterward and high leverage¹), to increase their chances of being re-elected, particularly when the local administration is highly indebted.

Italian local administrations' use of financial derivatives has proliferated due to federal

reforms that were introduced after 2001; under these reforms, regions are first-level administrative divisions with increasing obligations to their citizens (Piperno 2013). After 2001, regions introduced proper taxes, and the central government reduced the amount of resources transferred, but rising health care expenditures contributed to regional expenditures and debt (Figari and Gandullia 2008). After 2001, regions were also permitted to access the financial markets to manage their liabilities, and some accumulated risk in the absence of a clear regulatory framework. The Italian Parliament intervened to clearly limit the use of such complex financial securities by local administrations only in 2014, which left room for the spread of political – rather than financial – risks in the preceding years.

This is the first paper to investigate the activity of Italian regions in the OTC derivatives markets. Furthermore, as suggested by Steward and Cox (2008), it fills a gap in the literature by empirically investigating derivatives' impact on public administration debt in the aftermath of the great recession of 2007.

This paper is structured as follows: the first section discusses the role played by federalism and describes the dynamics of Italian regions' debt. The second section shows the legislative framework that first allowed and then disallowed the use of derivatives by Italian public entities. The third section gives an overview of the accounting system and rules related to the use of derivatives contracts by Italian regions. The fourth describes the use of OTC products by Ordinary Statute Regions, and the fifth section presents the econometric results. The last section concludes the paper.

Regions, Federalism and Debt

Although the origin of Italian regions can be found in the Constitution (1948), these regions were finally settled only after several decades; moreover, federalism remains an evolving process in Italy that has been implemented in a non-coordinated and non-organic manner (Piperno 2013). Italian regions are either Special Statute Regions (SSRs) or Ordinary Statute Regions (OSRs); SSRs include the islands (Sicily and Sardinia) and border regions (Trentino Alto Adige, Friuli Venetia Giulia and Valle d'Aosta), and they enjoy a higher degree of legislative freedom. Only in 1970 were OSRs² established, at which time the first regional councils were elected. OSRs have legislative power together with the state over a number of areas³; the state defines the legislative framework, and the regions operate to fill it, adapting it to fit local needs.⁴ Although SSRs have greater freedom, this analysis focuses on OSRs because they represent 75 per cent of Italy's territory and population.

Article 119 of Title V of the Italian Constitution (2001), as most recently modified, represents the basis for fiscal federalism and guarantees to all local administrations – regions, provinces, municipalities and cities – full financial autonomy over revenues and expenses. Law “La Loggia” (2003) partially implements title V of the Italian Constitution together with Law n. 42 of 5 May 2009. Regional resources are derived from proper taxes, a share of national taxes and a balancing fund.⁵ After introduction of the no-deficit law for the state balance sheet (Constitutional Law of 20 April 2012 implementing the Fiscal Compact Treaty), Article 119 of the Constitution was modified accordingly.

Given the presence of different levels of autonomy (regional, provincial, municipal and city-level), a clear operative framework for competencies should have been imposed, but overlaps are common. The absence of the mobility of public employees creates functional duplications that are difficult to eliminate. Regions manage resources but do not supply any direct service to citizens, which leads to weak political responsibility and also to a complex interpretation of their balance sheets.

Regions have full legislative power over their debt and related instruments (Law n. 389 of 1st December 2003) as one consequence of federalism. According to data published by the Corte dei Conti (the Italian administrative control authority), the total debt of OSRs in 2007 was €27 trillion, which amount had peaked in 2011 at €35 trillion (figure 1).

[Figure 1 here]

Health care expenditures represent one-third of regional debt (figure 2). Indeed, Lazio, Campania, Lombardy and Emilia Romagna issued over 50 per cent of their total health care debt from 2007 to 2012 (table 1).

[Figure 2 here]

[Table 1 here]

The Legislative Framework of OTC Derivatives

The Italian legislative system has been unable to address derivatives and their effects; in fact, local administrations were first completely free to engage in (complex) derivatives contracts, and their trading has been restricted only after excessive costs appeared on their balance sheets.

Local public administrations have been explicitly free to directly access the financial market to issue bonds and manage debt since the passage of Law n. 724 on 23 December 1994, which eliminated the monopoly of Cassa Depositi e Prestiti, the financial intermediary of the Italian Treasury. Article 2 of Ministerial Decree n. 420 of 5 July 1996 explicitly considered the use of OTC derivatives by administrations. Law 448/2001 Art. 41 – Finanziaria 2002 introduced innovations with respect to previous legislation and allowed Italian public administrations to issue bonds with repayment of principal and interest in full at maturity (*bullet*). Public administrations willing to use a bullet instrument are thus compelled to have a separate sinking fund, the objective of which is to distribute the burden of repaying the bonds evenly over a number of years or – alternatively – to negotiate a swap with a financial intermediary to replace the payment of principal by a lump sum with depreciation. Furthermore, the law refers to other possible financial derivatives transactions, postponing the adoption of regulations “relating to the amortization of debt and the use of derivatives by public entities to a Decree of the Ministry of Economy and Finance”. Ministerial Decree n. 389 of 1 December 2003 describes the types of

derivatives that Italian public administrations can underwrite.

The freedom to access financial markets and underwrite OTC contracts was limited only in 2007 (Finanziaria 2007) when administrations were compelled to send OTC contracts to the Minister of Economics and Finance before they were signed and approved by the councils. Finanziaria 2008 blocked the subscriptions of new derivatives, and in 2009, debt instruments that shift the reimbursement of debt on their expiry dates were explicitly prohibited (up-front and bullet).

In 2011, the Consiglio di Stato (CdS) increased the juridical entropy of derivatives. The CdS is the ultimate level of administrative justice, and it stated that the decree issued by the local authority that ratifies the OTC derivative contracts is null if the derivative yields a loss for the public administration. This administrative procedure can occur years after the contract has been underwritten and often conflicts with what is explicitly agreed upon about the effects of the contract; in 99 per cent of cases, the competence of the court is similar to that of the civil court in London, with its strong reputation for financial litigation. This mechanism of administrative auto-protection is typical of Italian law and undermines the private interests of banks and intermediaries in the contracts. This type of auto-protection may seem like a paternalistic solution for those administrations in financial distress, and it is not accompanied by action against the council members and public managers who caused the loss.⁶

The Stability Law of 2014 introduced a definitive ban on derivatives trading by all local public administrations. By 2014, regions had outstanding OTC contracts worth €10 trillion, according to data published by the Bank of Italy; under the law, they can choose either to foreclose these contracts or to honor the obligations, but the regions cannot increase their debt or

expenditures (because of the Fiscal Compact Treaty). Regional councils can try to foreclose only those contracts with positive market value but will likely meet with little success in doing so.

The Regional Accounting System and Derivatives

The regional accounting systems began to provide homogenous data only after federal structure was imposed on the public administration (after 2001); this imposed homogeneity in accounting is based in public law and requires registration of inflows and outflows of monetary funds, management of public goods and infrastructure, and monitoring of public obligations. Italian regions have differentially implemented the accounting rules, which were originally introduced in the '70s; a balance sheet comparison of different regions is difficult because they do not use a common accounting format (Piperno 2013). Moreover, public administration accounting systems are cash-based. The income statement sections reflect the functions developed by the authority; in the case of regions, these functions are developed by other entities, both public and private (e.g., health care firms and transport firms) based on regional contractual obligations.

Two laws passed in 2011 (D.lgs. n. 118 of 23 June 2011 and D.lgs. n. 149 of 6 September 2011) guarantee the homogenous application of accounting criteria in the public sector and the implementation of penalties and bonuses. More recently, local authorities have been compelled to consolidate their income statements with all controlled entities to provide a reliable assessment of their funds. Regions should also satisfy the Internal Stability Pact (ISP) and contribute to the stable reduction of the consolidated national public debt (Fiscal Compact Treaty).

Italian regions register the netting related to OTC derivatives as interest in the income statement; if such netting is positive, it is included in revenue, and if it is negative, it is included in costs. However, netting is added to other flows on bonds or other assets/liabilities with no breakdown, and no risk information is provided in the balance sheet. The Bank of Italy collects annual data on OTC contracts underwritten by local administrations with Italian banks (Bank of Italy 2013), and the Treasury and the Corte dei Conti are supposed to monitor these contracts and their effects.

In the USA, Ingram and DeJong (1976) assessed the effects that state regulations have on reporting practices of local government, and found that *'only minor differences were observed between the disclosure practice of cities in states that requires GAAP compliance and the practice of cities in states that do not regulate city disclosure practice'* (p.267). Furthermore, their findings are consistent with the joint hypothesis that *'GAAP discloses provide information of use to decision makers and that political managers have incentives to disclose this information whether or not they are required by state regulations to do so'* (p.267).

Regardless of the existence of disclosure practice, it is difficult to apply public accounting criteria to financial innovation, and financial flows related to derivatives contracts are registered only when paid. At the beginning of 2000, because of a lack of proper accounting criteria to register the flows related to interest rates and foreign exchange swaps, there were certain incentives to underwrite swap contracts with an up-front clause that provided liquidity at subscription to the administration and shifted the burden of higher debt at expiration (Dodd

2010). The U.S. GASB set international accounting standards for public bodies and introduced *ad hoc* standards for derivative instruments to reduce the opacity of such operations at the local and central levels and to avoid these shifts (GASB 2009). The GASB introduced hedge accounting for public administration, according to which the fair value of hedging contracts is registered in the assets or liabilities section of the balance sheet, and the resulting income is reported in the financial flow. Derivatives driven by speculation, i.e., with no hedging of business-related risk, are counted as investments. If a derivative contract no longer satisfies the hedging criteria, it is automatically counted as speculative. Any flow from a derivative contract should be counted as debt and cannot be used to pay current expenditures, which eliminates the advantage of any up-front type of clause. According to GASB standards, local administrations have strong incentives to underwrite hedge contracts. However, few countries have adopted the GASB standard and provide adequate information on financial trading and derivatives.

Ordinary Statute Regions and Derivatives

Before moving to econometric estimates, regional accounting data are analyzed to consider whether OTC derivatives have been used to hedge their debts or to raise cash to counter-balance the reduced resources from the central government. The analysis is partially limited by the fact that regions did not disclose the necessary information before 2007 and the accounting criteria are not suitable for disentangling the financial effects of complex financial securities, such as OTC derivatives. Regulatory uncertainty and the ban introduced in 2009 affected the data and their stability over the observation period. Regional councils approve the income statement approximately eighteen months after year-end, and the last available data are from 2012.

At the beginning of 2000, Italian local public administrations had a stock of debt at a fixed interest rate with Cassa Depositi e Prestiti (CDP) and used swap contracts to benefit from decreasing interest rates. In 2006, after a sudden jump in interest rates (figure 3), local administrations faced soaring financial payments for floating rate bonds and requested restructuring. The objective of these operations was to manage the growing interest payments, but they had dubious positive effects on certain administrations and in fact suited the intermediaries in 2010 and 2011 (e.g., the city of Milan and the province of Pisa).

[Figure 3 here]

The notional amount and the negative market value of derivatives underwritten by local authorities with Italian banks from 2007 to 2012 are reported in table 2; the negative market value (or mark to market) is the payment due by the administration to the bank if the administration wants to close the derivative contract before expiration. The mark to market depends on interest rates; thus, when the interest rate rises (drops), the value increases (decreases) for the fixed rate holder and decreases (increases) for the floating rate holder. The variation also depends on the duration and maturity of the contract.

Regions do not provide full disclosure regarding their underwritten derivatives contracts; thus, this study addresses the aggregate accounting data and tries to infer how the (undisclosed) portfolio has been built. If the aim of a derivative contract with no trading purpose is to hedge against an increase in the interest rate, a negative relationship is expected between the notional

value and the negative market value in a scenario characterized by decreasing interest rates, as was registered in 2007-2012 (figure 3).

In 2007, 671 local administrations underwrote derivatives, whereas only 156 remained on the pitch in June 2014 (table 2); the prohibition introduced in 2008 and affirmed in 2009 – in addition to the restructuring of many contracts before their expiration – might explain this huge reduction in the number of local administrations, which occurred between 2007 and June 2014. The notional amount of OTC derivatives underwritten by the regions with Italian banks was €31,520 million in 2007, which dropped to €9,751 million in June 2014. Conversely, the negative market value for derivatives increased slightly from €902 million in 2007 to €1,247 million in June 2014. After 2008, the negative market values of OSRs increased due to the high volatility of financial markets and the sovereign debt crisis. Piedmont, Lazio and Campania show the higher negative market values.

[Table 2 here]

Over the 2007-2011 period, global interest rates decreased (figure 3), whereas the negative market value of OSRs first increased, from €575 million in 2007 to €652 million in 2008, and then decreased to €556 million in 2011 (figure 4). Over the same period, the positive

market value decreased from €597 million in 2007 to €485 million in 2011 (figure 4).

Assuming that OSRs underwrote interest rate derivatives to smooth the interest rate exposure (i.e., the OSR is the fixed receiver), a negative relationship is expected between the notional amount and negative market value; simultaneously, a positive relationship between the notional amount and positive market value should appear in the data. The official statistics from the Corte dei Conti, however, offer a different picture. The relationship between the negative market value and the notional amount is not as expected, i.e., it is not negative (figure 5); moreover, the relationship between the positive market value and the notional amount is also not as expected, i.e., it is not positive (figure 6). In the absence of external shocks and given that the underlying debt also increased, these statistics indirectly confirm the suspicion that derivatives have been used by OSRs not only to hedge risk but also to provide cash at subscription before 2009 because the portfolio's behavior is not fully consistent with a hedging profile (e.g., a swap with a up-front clause).

[Figure 4 here]

[Figure 5 here]

[Figure 6 here]

Empirical Analysis – 15 Italian OSRs

Data

In this section, the use of OTC derivatives by Italian regions is investigated using a sample of 15 OSRs over the 2007-2012 period. The sample begins in 2007 because the regions did not disclose the relevant information before that date; yearly data have been collected from different sources and from ISTAT, Bank of Italy, Osservatorio sulle Regioni, and the regions' websites, in particular. The variables employed in the estimates are described in table 3. Total debt is the OSR's outstanding debt; GDP per capita measures the size of the OSR; Political Party is a dummy variable that equals 1 when the left-wing party has the ruling majority of the region and 0 when the right-wing political party is in charge; the interest expense is the annual expense for interest paid by the OSR for all liabilities; negative market value represents the liabilities of the region with its counter parties and is the sum of all contracts with a negative market value at the reporting date (i.e., at the end of the year). The second column of table 3 reports the predictions between the dependent variable, the OSRs' total debt, and the explanatory variables. Indeed, a positive relationship is expected between GDP per capita and total debt that is mostly due to the increasing path of health care expenses in the period under consideration. The interest expense can influence the dynamics of total debt; a positive relationship is expected between these two variables because the higher the interest expenses of an OSR are, the higher the debt

burden in periods of low interest rates, as in 2007-2012. Because derivatives should be hedging contracts, their greater negative market value should indicate greater total outstanding debt.

[Table 3 here]

[Table 4 here]

Table 4 shows the descriptive statistics for the variables; the sample is a balanced panel dataset of 15 Italian OSRs with 90 OSR-year observations. Average total debt is €2.3 billion, where 32 per cent is health care and 68 per cent is non-health care debt. The average yearly interest expense is €133 million. The average Italian OSR's GDP per capita is €25,000. The descriptive statistics show that in 62 per cent of the Italian OSRs, a left-wing political party is in charge, such as DS, PD or SEL. Of special interest is derivatives exposure; the average negative market value of OSRs is €65 million, with a high variability, as this exposure varies from €2 to €322 million. Such a large variation means that regions are employing different strategies; indeed, a hedging strategy should produce a negative (or even null market value), while some regions exhibit large negative market values; considering the statistical analysis described above on the relationship between the notional value and negative market value, our suspicion that derivatives have been employed also to manage costs and raise cash is further supported.

Methodology

This research uses a balanced panel dataset over a time period of six years with multiple cross-sections for each year. The number of observations increases the degree of freedom and reduces the collinearity between independent variables, resulting in estimates with improved efficiency. The validity of the results is also bolstered as the panel dataset controls for omitted variable bias (Hsiao 2003). The longitudinal dimension reduces omitted variable bias.

We verify the influence of financial derivatives on the fluctuation of OSRs' total debt. Following the literature on regions and debt (Figari and Gandullia 2008, among the others), equation (1) is estimated as follows:

$$\begin{aligned} Total\ debt_{it} = & c + \alpha Interest\ Expense_{it} + \beta GDP_{per\ capita\ it} + \gamma Political\ Party_{it} + \\ & + \delta Negative\ Market\ Value_{it} \end{aligned} \quad (1)$$

where $total\ debt_{it}$ represents the debt of OSR i over the period t ; the main drivers of regions' total debt in eq. (1) are its costs, $interest\ expense_{it}$ and the size of the region, as measured by $GDP\ per\ capita_{it}$. The leading $political\ party_{it}$ can help explain the dynamics of debt because throughout the history of Italy, left-wing parties have contributed to debt stockpiling. The effect of financial derivatives on total debt is measured considering the *negative market value* of outstanding contracts.⁷

Results

Following the literature on OSRs' debt, an Ordinary Least Square (OLS) estimator was employed. Table 5 displays the empirical results by considering the variables' predictions reported in table 3. The first important piece of evidence is the R-Squared of OLS estimates (79%), which predicts the percentage of variation in the dependent variable (total debt) that the equation explains. The model has two out of four explanatory variables that are statistically significant (i.e., interest expense and the negative market value of derivatives). The results show that when a left-wing political party (such as DS, PD or SEL) is in power, the OSR total debt decreases, although the coefficient is not statistically significant, which represents a departure from the historical Italian experience.

The empirical relationship between total debt and a region's size – GDP per capita – is positive, as expected. Further, interest expense, a relevant debt driver, is statistically significant and positively contributes to total debt. Of special interest is the negative market value of derivative contracts, which represents OSRs' potential loss that is statistically significant at the 1 per cent level; an increase in the negative market value of derivatives of 1 per cent produces an increase in total debt of 13 per cent.

[Table 5 here]

There is only scarce empirical evidence that may be used for comparison because of the lack of accounting data on regions and local public administrations; our findings are fully consistent with the findings reported in the public debt management literature (Piga 2001; Figari and Gandullia 2008; Dodd 2010; Piperno 2013) and at the international level (Perignon and Valee 2013), according to which hedging tools have significant effects on debt management. The estimate of eq. (1) fits the Italian data for OSRs, but the lack of more detailed data inhibits further investigation.

Empirical Analysis – 4 Italian Ordinary Statute Regions

Data

In this section, we focus on four OSRs over the 2007-2012 period. These regions – Campania, Lazio, Lombardy and Piedmont – have a total debt that is greater than €2 billion and a negative market value of derivatives that is greater than €50 million. With such large outstanding debt, regions should have been cautious with regard to financial tools, and derivatives should have been employed as hedging instruments; we know from the statistical analysis that these regions have also likely employed derivatives to raise cash, which can help explain the large negative market value of the contracts they exhibit.

With this empirical analysis, we want to determine to what extent over-indebted regions employed derivatives and, in particular, if the negative market value is driven by outstanding debt – particularly the non-health care debt that is the underlying asset of most derivatives

contracts – and the interest expense. To the best of our knowledge, no study has adequately addressed this rather important phenomenon for private investors, such as non-financial firms.

Yearly data have been collected from the Osservatorio sulle Regioni and the Corte dei Conti. Table 6 describes the variables employed, and the predictions between the dependent (*negative market value*) and the independent (*interest expense, non-health debt and total debt*) variables. These four regions' exposure related to derivatives shows high variability (from €60 to €322 million), reflecting the different hedging strategies that have been employed. The higher the negative market value, the higher total debt should be. We also expect a positive relationship between negative market value and non-health care debt.

[Table 6 here]

[Table 7 here]

Table 7 shows the descriptive statistics of the variables. The final sample is a balanced panel dataset of 4 Italian OSRs with 24 OSR-year observations. The average total debt is €5.6 billion, where 69 per cent is non-health care and 31 per cent is health care debt. The average yearly interest expense of the four OSRs (€303 million) is higher than the average value of the

15 OSRs (€133 million), whereas the average GDP per capita of the subsample is not substantially different from that of the larger sample. With respect to the political party ruling in the four regions, in 38 per cent of cases, a left-wing political party is in charge, whereas in 62 per cent of cases, there is a right-wing party.

Methodology

This research uses a balanced panel dataset over a six-year period with multiple cross-sections for each year. We investigate whether negative market value is driven by outstanding debt, particularly non-health care debt, and interest expense. To test this relationship, the following equation is estimated:

$$\text{Negative Market Value}_{it} = c + \alpha \text{Interest Expense}_{it} + \beta \text{Total debt}_{it} + \gamma \text{Non-health care debt}_{it} \quad (2)$$

where *Negative Market Value_{it}* represents the negative market value of derivative contracts of OSR *i* in year *t*. The main drivers of regions' negative market value in eq. (2) are *interest expense_{it}*, regions' *total debt_{it}* and *non-health care debt*.

Results

Table 8 displays the empirical results, (bearing in mind the paucity of the data). Three out of four of the explanatory variables are statistically significant: interest expense, total debt and non-health care debt. An important piece of evidence is the R-Squared of the OLS estimates,

which predicts the percentage of variation in the dependent variable that the equation explains; in this case, 79 per cent of the variation in negative market value is explained by the independent variables.

The empirical relationship between the negative market value and total debt is statistically significant at the five per cent level but with a negative sign. This result represents a relevant difference with the empirical results referring to the full sample of regions, fueling the suspicion that these (highly indebted) regions probably employed derivatives to raise cash and not simply to hedge outstanding debt. Nevertheless, the relatively small impact of derivatives on debt is good news for Italian taxpayers. The relationship between negative market value and the non-health care debt is positive, as expected, and is also statistically significant at the one per cent level.

[Table 8 here]

The estimate of equation (2) fits the Italian data for OSRs, but the lack of more detailed data inhibits deeper investigation and/or further robustness checks.

Conclusion

After 2001, Italian regions faced increasing financial obligations with their citizens,

whereas resources from the state have decreased; a few of these regions already found themselves in financial distress, which was also sometimes due to mismanaged OTC contracts (e.g., Piedmont, Campania). This is the first study to empirically investigate the use of OTC derivatives by Italian regions over the 2007-2012 period; notably, the unexpected statistical relationship between the market value and the notional value of derivatives underwritten some doubts about the efficacy of regions' hedging strategies.

Based on the available data, this research confirmed that the main driver of regional total debt is costs and interest expenses, whereas the negative market value of derivatives simultaneously has a significant positive impact on outstanding debt. Focusing on the four most indebted regions, negative market value has a significant relationship (at the five per cent or one per cent levels) with interest expense, outstanding debt and, in particular, with the non-health care debt that is often the underlying asset of such contracts. It is not unlikely that OTC derivatives have been employed to hedge the outstanding debt and to finance current expenses.

The fragility of the Italian legislative system, the lack of responsibility of civil servants and public managers, the absence of an organic legislative framework with respect to the use of OTC contracts, fragmented control, and weak monitoring contribute to the skepticism regarding the use of OTC derivatives and strongly limit their financial benefits. Based on our results, the ban on trading derivatives for all administrations as a result of the Stability Law for 2014 is very welcome. Further research is necessary in this area, in particular to understand whether and how other public administrations employ and trade OTC derivatives (provinces, municipalities and others).

Notes

1. The city of St. Etienne paid 24% of interest in 2010 because its toxic loan was indexed to the British Pound – Swiss Franc exchange rate.
2. OSRs include Piedmont, Lombardy, Veneto, Liguria, Emilia-Romagna, Tuscany, Umbria, Marche, Lazio, Abruzzi, Molise, Campania, Aqulia, Basilicata, and Calabria.
3. The areas in which OSRs and the state have legislative power are as follows: 1) industry, commerce and mining, 2) education and local credit bodies, 3) local infrastructure for agriculture and drainage, 4) expropriation in the public interest, 5) energy production and distribution, 6) fluvial, areal and sea lines in the region, 7) public services, 8) assistance and charity, 9) hygiene and health services, and 10) entertainment.
4. Local duties include the following: 1) education, 2) employment, social assistance and pensions, 3) arts and antiquity, and 4) in other fields based on state law.
5. The balancing fund collects resources from high-income areas and supports low-income areas. This fund should balance the ability of local administrations to guarantee the same services to citizens.
6. Some local administrations suited the intermediaries that sold them the derivatives contracts, but no public manager has been involved.
7. Notional value, inflows and outflows of derivatives are not reported with the same accuracy in the accounting of all OSRs; in fact, some regions report the foreclosure of swap contracts as an inflow with a negative sign. The data on (negative or positive) market value are affected by this distortion to a limited extent.

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delle città metropolitane, delle comunità montane e delle comunità isolate, nonché dei

consorzi tra enti territoriali e delle regioni, ai sensi dell'articolo 41, comma 1, della legge 28

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Figures and Tables

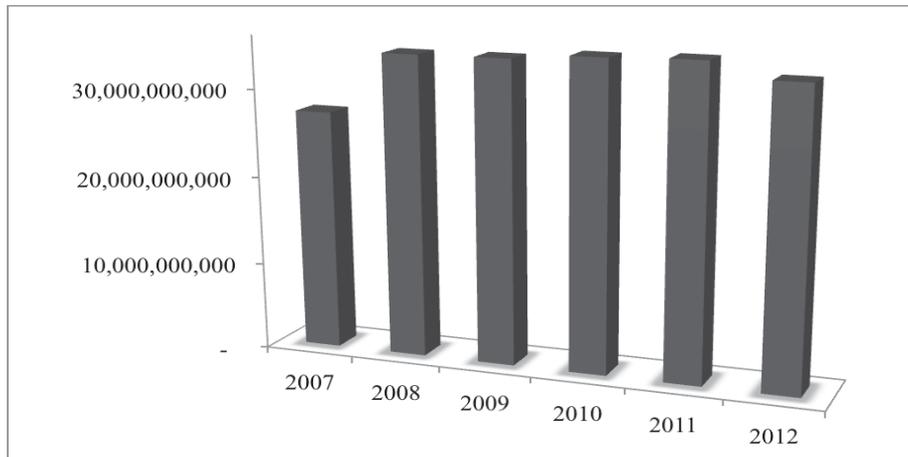


Figure 1: Evolution of the debt of Ordinary Statute Regions

Source: Corte dei Conti, Relazione sulla gestione delle Regioni (2011, 2013).

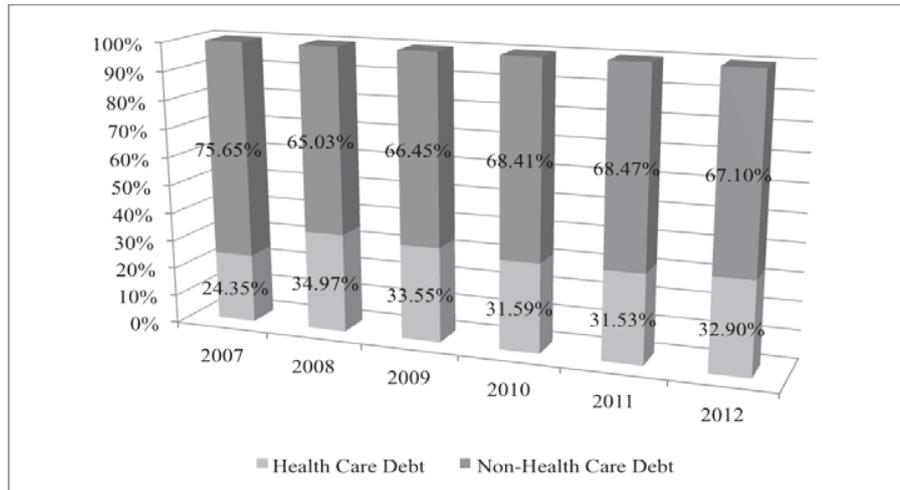


Figure 2: Debt of Ordinary Statute Regions (%)

Source: Corte dei Conti, Relazione sulla gestione delle Regioni (2011, 2013).

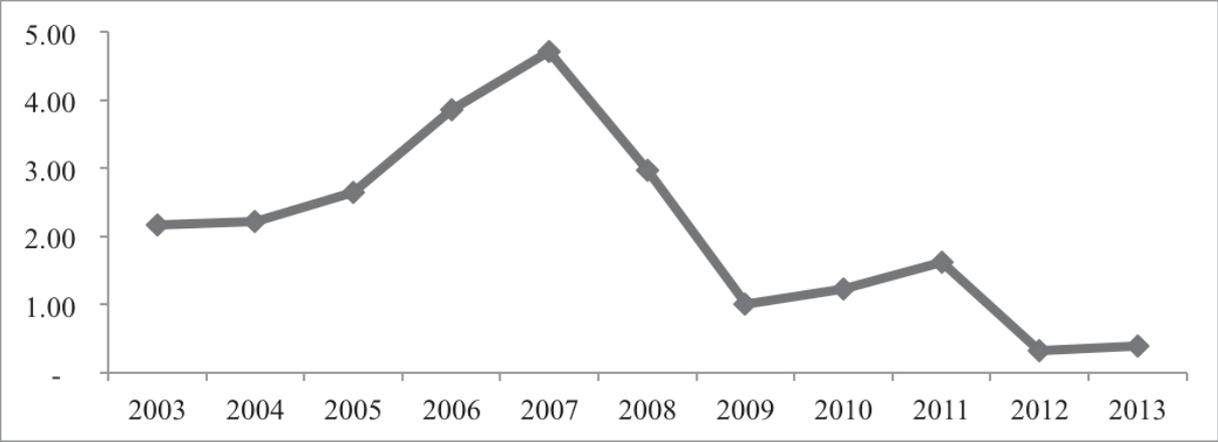


Figure 3: Euribor 6 months (yearly, %)
Source: Bloomberg.

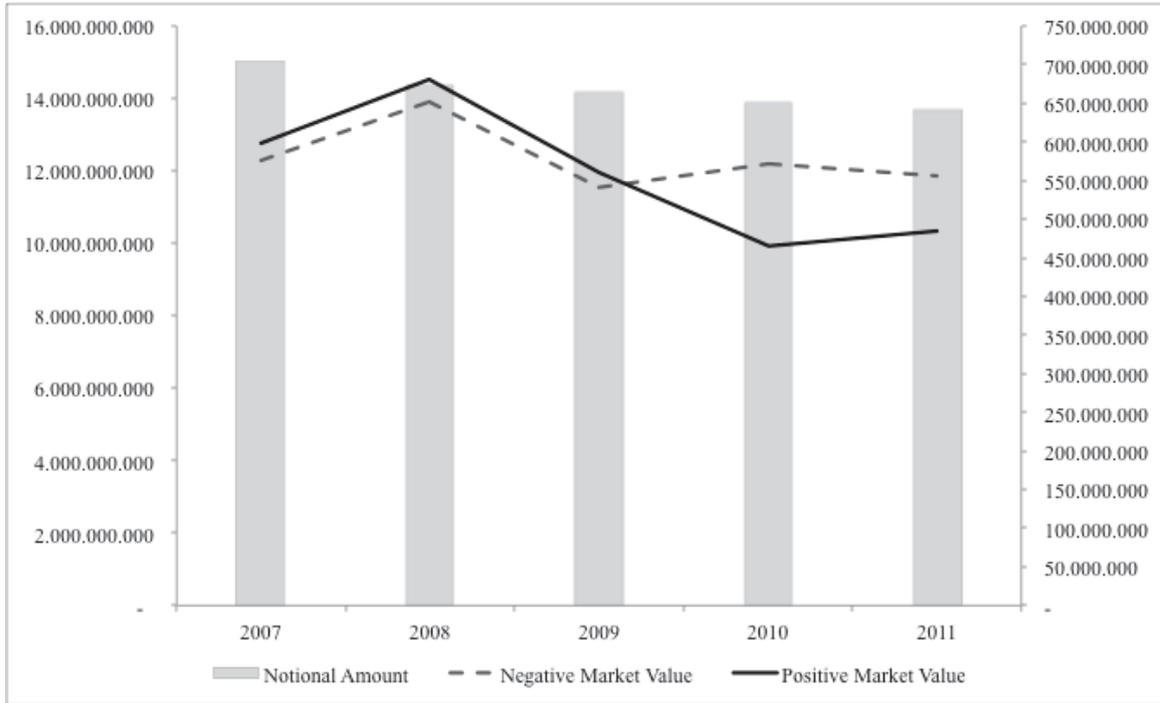


Figure 4: Positive and negative market value (rhs scale) and notional value (lhs scale) of Italian RSO (euro)

Source: Corte dei Conti, Relazione sulla gestione delle Regioni (2011, 2013).

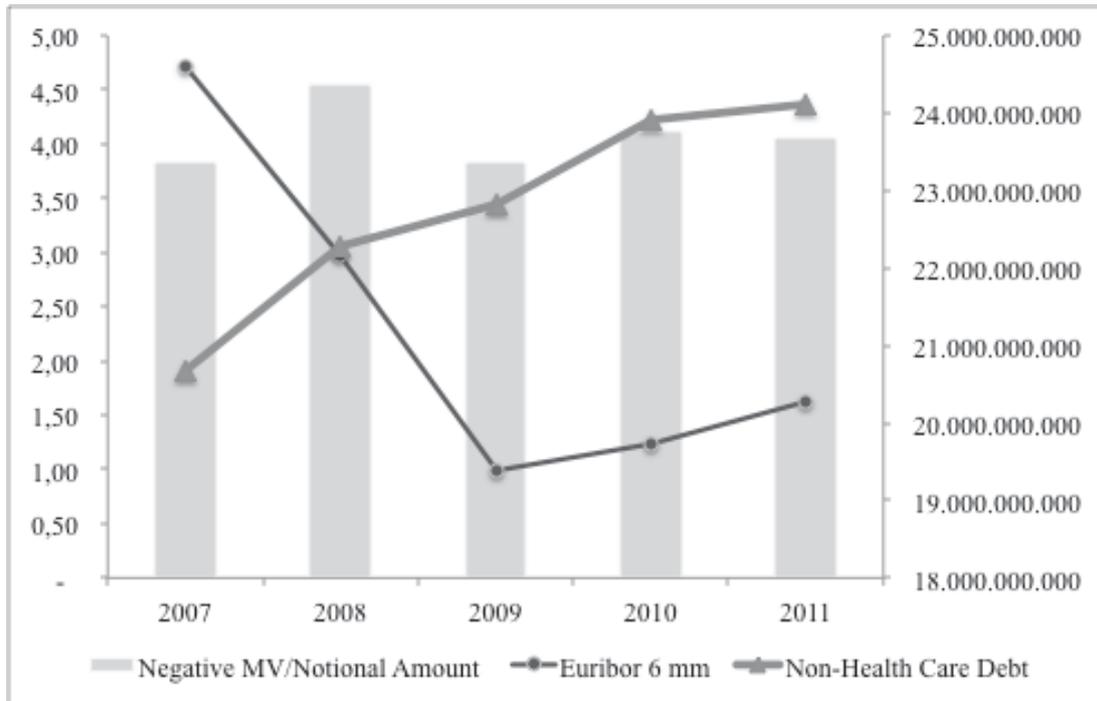


Figure 5: Euribor 6mm (%), the ratio between negative market value and the notional value of RSO (%) and debt (rhs scale, euro)

Source: Euribor: Bloomberg; MV and notional value: Corte dei Conti, Relazione sulla gestione delle Regioni (2011, 2013).

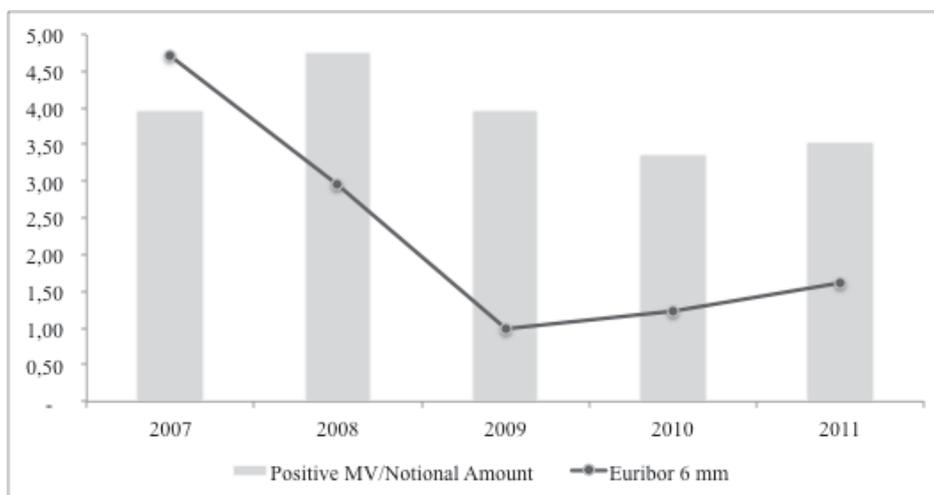


Figure 6: Euribor 6mm (%) and the ratio between positive market value and the notional value of RSO (%)

Source: Euribor: Bloomberg; MtM and notional value: Corte dei Conti, Relazione sulla gestione delle Regioni (2011, 2013).

Table 1: Ratio between health care and total debt of Ordinary Statute Regions

Regions	2007	2008	2009	2010	2011	2012
Piedmont	1.70%	0.88%	0.85%	0.82%	0.75%	0.68%
Lombardy	9.98%	4.84%	4.29%	3.66%	2.80%	1.93%
Veneto	4.58%	2.44%	2.43%	2.42%	2.29%	2.19%
Liguria	0.77%	0.40%	0.38%	0.36%	0.32%	0.00%
Emilia Romagna	14.18%	7.50%	7.41%	7.31%	6.84%	7.20%
Tuscany	3.27%	1.73%	1.71%	1.66%	1.56%	1.48%
Marche	6.27%	3.21%	3.07%	2.91%	2.61%	3.83%
Umbria	0.37%	0.19%	0.17%	0.16%	0.14%	0.12%
Lazio	16.47%	48.13%	48.86%	49.81%	53.23%	52.13%
Abruzzi	14.24%	7.30%	6.98%	6.63%	5.95%	5.34%
Molise	0.19%	0.89%	0.90%	0.92%	0.89%	0.87%
Campania	11.68%	13.59%	13.82%	14.06%	13.62%	14.54%
Puglia	11.34%	6.27%	6.50%	6.76%	6.70%	6.73%
Basilicata	0.07%	0.07%	0.07%	0.07%	0.07%	0.06%
Calabria	4.88%	2.54%	2.54%	2.45%	2.24%	2.90%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

High indebted Regions in bold.

Source: Corte dei Conti, Relazione sulla gestione delle Regioni (2011, 2013).

Table 2: Derivatives of Italian local public administrations with Italian banks (€ million)

	Negative market value (1)							
	Dec. 07	Dec. 08	Dec. 09	Dec. 10	Dec. 11	Dec. 12	Dec. 13	Jun. 14
Piedmont	112	216	190	257	387	500	353	436
Valle d'Aosta	0	0	0	0	0	0	0	0
Lombardy	88	100	98	93	77	85	62	59
Trentino Alto Adige	5	0	0	0	6	10	5	9
Veneto	34	67	60	64	94	116	71	85
Friuli-Venetia Giulia	9	5	8	7	5	3
Liguria	5	9	12	11	10	10	7	7
Emilia-Romagna	24	65	56	61	82	96	62	62
Tuscany	42	48	52	55	85	107	66	65
Umbria	35	26	25	25	27	27	24	23
Marche	18	13	14	12	12	12	7	7
Lazio	70	129	141	179	124	152	110	114
Abruzzi	28	46	30	45	56	82	57	82
Molise	2	19	12	16	29	38	23	27
Campania	195	207	215	175	190	189	157	149
Apulia	84	19	17	8	5	2	2	2
Basilicata	5	9	10	11	13	13	8	8
Calabria	61	55	53	44	34	34	31	31
Sicily	74	74	86	92	98	109	84	79
Sardinia	13	8	8	6	4	3	3	3

	Negative market value (1)							
	Dec. 07	Dec. 08	Dec. 09	Dec. 10	Dec. 11	Dec. 12	Dec. 13	Jun. 14
Total negative MV	902	1,116	1,089	1,160	1,338	1,589	1,131	1,247
as % of debt	0.8	1	0.9	1	1.1	1.4	1.2	1.2
Positive MV (2)	120	89	99	103	186	182	65	78
Notional value	31,520	26,963	23,403	18,542	13,475	11,283	10,223	9,751
Number of local administrations	671	474	484	309	230	175	169	156
of which:								
Negative MV of regions	113	410	384	449	651	810	579	687
as % of debt	0.3	0.4	0.3	0.4	0.6	0.7	0.5	0.7
Number of regions	11	13	13	12	12	12	11	10
Negative MV of province	93	123	118	130	150	184	130	132
as % of debt	1.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1
Num. di Province	31	33	29	29	26	24	20	20
Negative MV of cities	693	570	569	563	498	541	391	390
as % of debt	1.5	0.5	0.5	0.5	0.4	0.5	0.4	0.4
Number of cities	621	414	429	256	184	127	126	114
Negative MV of other administrations	4	13	17	19	39	54	31	38
as % of debt	0	0	0	0	0	0	0	0
Number of other administrations	8	14	13	12	12	12	12	12

Source: table 33 of the Statistical Bulletin. Banca d'Italia (2011, 2013, 2014).

(1) Negative value for the local administration and positive value for the bank operating in Italy; this value does not add to debt. The minimum size is 30 thousand euros.

(2) Positive value for the local administration and negative value for the bank operating in Italy.

Table 3: Variable description and prediction - Full sample: 15 Italian OSRs

Variable	Prediction	Description	Source
	(Dep. var. total debt)		
GDP per capita	+	Measures the size of the region. A positive relationship with Total Debt is expected because of the increasing dynamics of health care expenses during the period. Measured in €.	ISTAT
Political party	+	Dummy variable that takes a value of 1 when the political parties are PD, DS and SEL (left-wing), and takes value of 0 if PDL Lega Nord (right-wing).	Regions' Websites
Interest expense	+	Measures the cost of debt. A positive relationship with Total Debt is expected: the higher the interest expenses the higher the debt burden. Measured in €.	Osservatorio sulle Regioni, 2013
Negative market value	+	Measures the current loss position on the reporting date of an Italian OSR. A positive relationship with Total Debt is expected: the higher the negative market value is, the higher the total debt of the region.	Bank of Italy

Table 4: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Total debt	90	2,218,170	2,515,019	0	10,500,000
Health debt	90	703,786	1,288,081	0	5,909,759
Non-health debt	90	1,514,384	1,613,696	0	6,362,283
Interest expense	75	133,120	136,077	0	628,540
GDP per capita	90	24.61	5.60	16.37	33.75
Political party	90	0.62	0.49	0	1
Negative market value	90	65,156	66,725	2,000	322,000

Legend: all variables measured in thousands of €, except the dummy Political Party.

Table 5: Empirical results

Dep. var. total debt	OLS	
	Coeff.	p-value
GDP per capita	10,742	0.666
Political party	-300,854	0.310
Interest expense	11	0.000***
Negative market value	13	0.000***
Constant	-118,320	0.862
Number of obs.	75	
R-squared	79%	

***, **, and * significance at 1%, 5% and 10% respectively.

Table 6: Variables description and prediction - Sub-Sample: 4 Italian OSRs

Variable	Prediction	Description	Source
(Dep. negative market value)			
Interest expense	+	Measures the cost of debt. A positive relationship with Total Debt is expected: The higher interest expenses are, the higher the debt burden. Measured in €.	Osservatorio sulle Regioni, 2013
Non-health debt	+	Measure of the non-health debt of an Italian OSRs. Is expected a positive relationship with the negative market value.	Corte dei Conti
Total debt	+	Measures the total debt exposure of an Italian OSRs. It is the sum of the non-health care debt and the health care debt. A positive relationship with the negative market value is expected: The higher is the negative market value, the higher is the total debt of the region.	Corte dei Conti

Table 7: Descriptive statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Total debt	24	5,602,640	2,677,867	2,227,680	10,500,000
Health debt	24	1,731,568	2,156,292	75,507	5,909,759
Non-health debt	24	3,871,072	1,282,432	2,015,092	6,362,283
Interest expense	20	303,287	157,496	163,490	628,540
GDP per capita	24	26.92	6.35	16.37	33.75
Political party	24	0.37	0.49	0	1
Negative market value	24	152,250	65,957	60,000	322,000

All variables measured in € thousands, except the dummy Political Party.

Table 8: Empirical results

OLS		
Dep. var. negative market value	Coeff.	p-value
Non-health debt	0.046	0.000 ***
Total debt	-0.009	0.035 **
Interest expense	0.113	0.048 **
Constant	-14,316	0.533
Number of obs.	20	
R-squared	79%	

***, **, and * significance at 1%, 5% and 10% respectively.