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The Sources of VAT gaps in WAEMU: Case studies on Benin and Burkina Faso

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List of acronyms

Abbreviation	Explanation
AfDB	African Development Bank
CFA	Communauté Financière d'Afrique
CFAF	Communauté Financière d'Afrique Franc
DRM	Domestic Resource Mobilisation
GDP	Gross Domestic Product
GNP	Gross National Product
INSAE	Institut National de la Statistique et de l'Analyse Economique (Benin)
INSD	Institut National de la Statistique et de la Démographie (Burkina Faso)
IFR	Impôt Forfaitaire sur le Revenus
IFU	Identifiant Fiscal Unique (Unique Fiscal Identifier)
IMF	International Monetry Fund
IMF WoRLD	IMF World Revenue Longitudinal Data
LIC	Low-Income Countries
TEC	Tarif Extérieur Commun (WAEMU's Common External Tariff)
UEMOA	Union économique et monétaire ouest-africaine
VAT	Value-Added Tax
WAEMU	West African Monetary and Economic Union
WB	World Bank
WB WDI	WB World Development Indicators database

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Executive Summary

This paper analyzes the performance of the Value-Added Tax (VAT) in Benin and Burkina Faso, with the objective of supporting policy design and reforms aiming to improve upon domestic-resource mobilization in these countries. Especially, the paper delivers a sectoral breakdown of inefficiencies in VAT-revenue collection in the two countries. First, data on tax revenue across eight West African countries (Benin, Burkina Faso, Cote d'Ivoire, Guinea Bissau, Mali, Niger, Senegal, and Togo) shows a gradual upward trend since the mid-1990s. However, the domestic revenue mobilization performance in the region is by no means successful. As of 2014, for instance, only Senegal has managed to meet the 17% tax to GDP ratio threshold set by the West African Economic and Monetary Union. Second, the efficiency of VAT has improved over time in both Benin and Burkina Faso. Yet, the slow progress is particularly worrying and translates to a considerable loss in potential tax revenue. Benin, particularly, showed a rapid improvement in the early 1990s, following its VAT adoption. The progress since then, nevertheless, remains very sluggish. In the meantime, Burkina Faso has virtually closed the considerable efficiency gap it had with Benin. Our decomposition analysis shows that efficiency gains explain much of the historic improvement in VAT revenue.

Third, we analyze the sources of VAT gaps using data on the activities of twenty key sectors in each country (based on national input-output tables) over the 1999-2014 period. The results show that Benin's VAT gap is primarily explained by inefficiencies in the following sectors: agriculture; sales; agro-food industries; transport; post offices; telecommunication; construction work; public administration; and other service sectors (including accommodation and restaurants). In Burkina Faso, we find similar sectoral contributions to VAT gap but public administration plays a much dominant role as compared to Benin.

Fourth, we further decompose VAT gap in to two useful terms: the 'compliance gap' and the 'policy gap'. That is, we explain the mismatch between potential VAT revenue and actual VAT revenue based on the revenue gap stemming from the imperfect implementation of VAT (compliance gap) as well as the one from exemptions/deductions on the standard VAT rate, deliberately introduced by government policy (policy gap). The result shows that compliance gap largely explains VAT inefficiencies in Benin than in Burkina Faso. Yet, the two countries differ on how this trend is evolving. While compliance gap is increasing overtime in Burkina Faso and in recent years explains a larger part of the overall VAT gap, there is a reverse trend in Benin. We show that the sectoral sources of VAT gap (i.e. sectors responsible for compliance gap) are similar in the two countries. Addressing the compliance problem would be helpful to close the VAT gap in the economies. However, we note that the policy gap and the compliance gap could interact with each other - a feature that has not been explicitly taken into account here and should require further analysis.

Additional research would be also necessary to understand the general equilibrium effects of alternative tax policies as well the role of key domestic institutions (government effectiveness in providing public goods, trust in the government, regulatory issues, etc.) on both the demand and supply-side factors inherent to the performance of VAT.

1 | Introduction

To meet the target of delivering adequate physical and social infrastructure, African governments need to enhance their Domestic Resource Mobilization (DRM) capacities. Meanwhile, tax policy reforms will serve as an essential feature of such an effort. A well-developed DRM structure gives countries more financial autonomy as well as self-design and enforcement of public policy. For this reason, international development organizations and scholars are increasingly advising developing countries to enhance their DRM policy. This is also well reflected in a series of recent high-level meetings among African policy makers and the development community regarding 'development financing' (UNECA, 2016; AfDB, OECD, UNDP, 2015; African Union, 2014; UN, 2014).[2]

The Value-Added Tax (VAT) is one of the better candidate tax system that may help to realize DRM in developing countries.[3] To begin with, VAT is one of the simplest tax systems. As many developing countries (including Benin and Burkina Faso) face difficulties in their tax administration, a simple tax system with a single rate will ease the burden associated with a complex tax system with high degree of rate differentiation. This also makes the system in theory less prone to tax evasion. Further, a trail of invoices follow VAT as it is being charged on the value added through the production process. This will help tax authorities to better identify compliance problems across sectors of the economy. In connection with this, some even argue that VAT is 'self-policing' (Bird and Gendron, 2007 Le, 2003; and Lin, 2008).

Among different tax instruments, VAT (in principle) is one of the least distortionary. Unlike income taxes, VAT does not bring significant distortions to consumption decisions - relative to savings and investment decisions (Le, 2003; Kneller et al., 1999). VAT also does not have sizable 'cascading effects' (i.e. tax-on-tax or double-taxation), when compared to other consumption taxes. This is because VAT paying businesses can claim credit on VAT paid on intermediate inputs.

Moreover, VAT is argued to be less sensitive to the size of the informal sector. If it is well designed, VAT may even serve as a mechanism that reduces the size of the informal sector overtime (Boadway and Sato, 2009). This gives VAT a special appeal to developing countries as many of them have an outsized informal (which could potentially become sources of revenue) but, unfortunately, is hidden from their tax system. Yet another 'indirect' benefit of VAT adoption may be the broad reform countries implement (both on their old tax policies as well as institutions) to support VAT. As the experiences of many developing countries showed, the introduction of VAT was followed by widespread reforms that had various positive externalities. For instance, many developing countries removed less efficient and administratively cumbersome tax policies while implementing VAT.

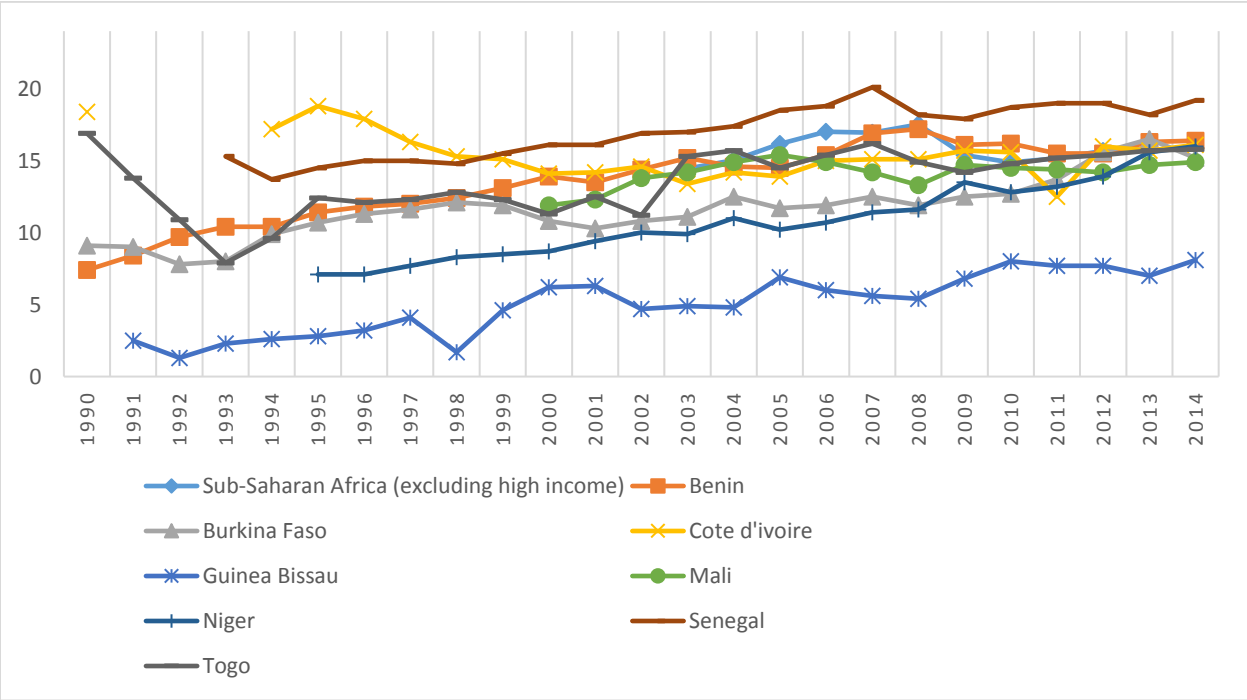
Despite the positive trend in revenue mobilization, significant revenue gaps are still observed in many Low Income Countries, especially in Sub-Saharan Africa where the average tax to GDP ratio remains

[2] This idea is also well rooted in the recent 'African Tax Initiative' which aims to promote tax revenue collection as well as their efficient use in the continent (ITC, 2017).

[3] Due to its success in enabling governments to rapidly boost tax-revenue collection, VAT has earned the nickname of a 'money machine' (Keen and Lockwood, 2006 and 2010; Houssa and Megersa, 2017).

below 16%. Thus, most countries in the West African Monetary and Economic Union (WAEMU)[4] fail to achieve the minimum convergence threshold of 17% of tax revenue as share of GDP (AFDB, 2015). For instance, the average tax revenue over the 1994-2014 period in Senegal and Cote d'Ivoire, i.e. in WAEMU's better performing Member States, averaged a bit over 15% of GDP.[5] Senegal, especially, takes the lead in tax revenue mobilization in WAEMU, where tax revenue averaged about 17% of GDP in the 1994-2014 period. On the lower extreme, Guinea Bissau by far under-performed with a tax ratio of about 5.4 % of GDP in the same period. The remaining countries show some divergence prior to the late 2000s. Since then, their tax revenue have tended to converge to around 16% of GDP (Figure 1).

Figure 1: Tax Revenue across WAEMU members (% GDP)



Source: using IMF WoRLD and BDSM-UEMOA data

Benin and Burkina Faso (like the majority of WAEMU Member States)[6] have converged to the level of tax revenue of around 15 to 16% of GDP in recent years. However, their current convergence hides their historical divergence. First, with an average tax revenue of 14.4% of GDP over the 1994-2014 period, Benin performed better than Burkina Faso who had a tax revenue average for the same

[4] The organization is also named (in French) 'Union économique et monétaire ouest-africaine' (UEMOA).
[5] Over the 1994-2014 period, Cote d'Ivoire had a tax revenue that average 15.3% of GDP. Until the late 1990s, the country had the highest level of tax revenue within the region. Since then, however, it has been overtaken by Senegal in revenue mobilization.
[6] Senegal and Guinea Bissau, which respectively are the best and worst performers within WAEMU, standout from the rest of the WAEMU Member States in terms of their revenue mobilization.

period of 12.2% of GDP. The gap between the two was even wider in the past. After comparable performance in the 1990s (i.e. early years of VAT adoption), the gap between Benin and Burkina Faso widened as the former significantly outperformed the latter. For instance, over the period 2000-10, Benin had an average tax revenue of 15.3% of GDP, while Burkina Faso had a tax revenue for the period averaging 11.7% of GDP.

Thus, in Benin and Burkina Faso (as well as other WAEMU countries), the tax ratio is generally low (Figure 1). That is, the level of tax revenue is lower than what would be required to finance the substantial infrastructure gaps and development needs these countries have - which henceforth heavily rely on public borrowing and foreign aid.

This paper presents case studies on Benin and Burkina Faso with the objective to identify the sources of VAT revenue gaps. In the meantime, understanding and measuring VAT gap helps the design of reforms and DRM capacities in these countries.[7] In particular, we decompose the VAT gaps in to two useful terms: the 'compliance gap' and 'policy gap'. The compliance gap captures inefficiencies related to imperfect implementation of VAT whereas the policy gap reflects those associated with the design of the VAT system.[8] We are also able to estimate the sectoral sources of these gaps. Analysis of data from 1999 to 2014 shows that the compliance gap is most responsible for VAT inefficiency in both countries and the results is more pronounced for Benin. We show that, the sectors mainly responsible for VAT's inefficiencies in Benin are activities related to agriculture and food items; sales; transport services; construction work; and public administration. In Burkina Faso we find similar sectoral contributions to VAT gap but public administration plays a much dominant role as compared to Benin.

The rest of this paper is organized as follows. In Section 2, we present the background of VAT reforms in WAEMU with specific focus on Benin and Burkina Faso. Moreover, we discuss the contribution of VAT to tax effort in the two countries. In Section 3 we present a sectoral analysis on VAT. We start with documenting sectoral contribution to VAT in both countries. Thereafter, we identify the sectoral sources of VAT gaps. Section 5 presents concluding remarks and policy recommendations.

[7] The choice of these two countries is based on data availability. When data on other countries become available the analysis can be easily replicable.

[8] First, there will be compliance problems since not all businesses who technically qualify for VAT payment are registered as VAT payers. Further, even among the pool of VAT registered businesses, there will be some which might pay less VAT than they should. Such compliance problems are, however, not restricted to VAT and affect any kind of tax instrument. The second main source of inefficiency, policy gap, arises due to the governments' deliberate amendments to the standard VAT rate on all consumption. Practically, all forms of VAT implemented in any country involve some form of exemption or in some cases rate differentiation. Policy gap tied to exemption arises as some categories of goods and services are exempted from VATT charges, for various policy reasons. the policy gap linked to rate differentiation arise as different rates, often rates that are lower than the standard rate, are applied to different goods and services. Apart from complicating the VAT tax code, these measures also introduce inefficiencies that would lower the level of VAT earned by a country. The level of inefficiency would ultimately depend on the size and breadth of the compliance problem in a country and the level of amendments to the standard VAT rate. These sources of VAT inefficiency would be discussed in detail in section 3.

2 | Background on VAT policy reforms in WAEMU

2.1. Framework of VAT policy in WAEMU

WAEMU Member States have been harmonizing their VAT systems, in line with their economic and monetary union's convergence criteria. In fact, the harmonization extends far beyond VAT in to general tax policies and other economic policies. The main objective behind the policy of harmonization is to impose VAT as the main internal tax instrument in the region and to minimize tax competition among country members.

By the fiscal year 2014, WAEMU has already managed to put over 80% of tax revenues of Member States (both tariff and non-tariff revenues) within its regional regulations or directives (Mansour and Rota-Graziosi, 2013). Trade taxes among Member States started to decrease following the setting up of customs union. As Diakite et al. (2017) note, between the 1990s and the 2000-10 reform era, there was about a 25.4% fall in the share of trade taxes within overall tax revenue in the region. Nevertheless, WAEMU has been able to foresee the coming decline in trade taxes. By July 1998, the union took the action of coordinating indirect domestic taxes (including VAT) in Member States. The intention was to raise the productivity of taxes within WAEMU. In line with this objective, the union introduced a transition program in 2006 for tax policies in Member States via Decision No. 10/2006/CM/UEMOA. The union particularly focused on the improvement of the VAT to GDP ratio and also excise taxes (Diakite et al., 2017).

This harmonization is to be realized via converging the base and the rates charged by Member States. In particular, this policy initially (specifically, Decree No. 02/98/CM/UEMOA) consisted of imposing a single VAT rate of between 15% and 20% in all member countries. However, a recent amendment of the VAT policy in WAEMU (Decree No. 02/2009/CM/UEMOA, which was carried out on 27 March 2009) allowed the application of a reduced rate of between 5% and 10% on certain goods. This policy reform for reduced rate within the WAEMU countries was induced by the economic and financial crisis that began in 2007. The reduced rate must be applied to a maximum of ten goods and services chosen on the commodity list defined below:

- **Goods**: edible oils; sugar; manufactured milk; pasta; livestock and poultry feed; chickens; corn, millet, sorghum, rice, wheat and fonio flour; agricultural material; hardware; solar energy production equipment.
- **Services**: accommodation and food services provided by hotels, restaurants and other approved organizations and services provided by organizers of approved tourist circuits; rental of agricultural equipment; repair of agricultural equipment; services carried out by undertakings in connection with funeral activities (UEMOA, 2014).

With the exception of Guinea-Bissau (see Table 1), all Member States have adopted VAT as a general tax on consumption; based on a generalized scope, a common tax base, a convergent taxation system,

and the use of tax credits guaranteeing the neutrality of VAT (UEMOA, 2014).[9] However, some countries adopted the tax system much earlier than others. VAT was first introduced within WAEMU in Cote d'Ivoire and Senegal in the 1960s (i.e. around the time these former French colonies gained their independence). However, at that moment, the system was limited to being a Manufacturing-level VAT - unlike its current application to diverse sectors of the economy (Charles and Owens, 2010). Cote d'Ivoire and Senegal were followed by Niger, who adopted the tax instrument in 1986. The 1990s (i.e. the 'reform era') saw the introduction of VAT in four remaining WAEMU Member States. Specifically; Benin and Mali in 1991, Burkina Faso in 1992, and Togo in 1995 (see Table 1). Guinea-Bissau (as a last remaining Member State) has yet to introduce VAT.

Furthermore, all WAEMU countries that have adopted VAT now apply the 18% VAT rate, with the exception of Niger which applies a rate of 19%.

Table 1: **VAT adoption in WAEMU**

WAEMU Countries	Year of VAT adoption	Current VAT rate (%)	VAT Rate at introduction (%)	Region
Benin	1991 [b, d]	18 [b, d]	18 [j]	West Africa
Burkina Faso	1992 [d]	18 [b, d]	18 [i 10]	
Cote d'Ivoire	1960 [b, d]	18 [b, d]	18 [b, d]	
Guinea-Bissau *				
Mali	1991 [b]	18 [b]	17 [c]	
Niger	1986 [c]	19 [b, d]	12 [c 11]	
Senegal	1961-80 [c 12]	18 [b]	20 [c]	
Togo	1995 [b, d]	18 [b, d]	18 [b, d]	

Source: a Ernst and Young (2015); b RMCD (2016)[13]; c Tait (1988) ; d Crowe Horwath (2016); e Due (1999); f Deloitte (2016); g Mansour (2015); h KPMG (2016); i OECD (2013); j IMF (1996);
*Guinea-Bissau has not yet adopted VAT, i.e. the only exception within WAEMU (IMF, 2013).

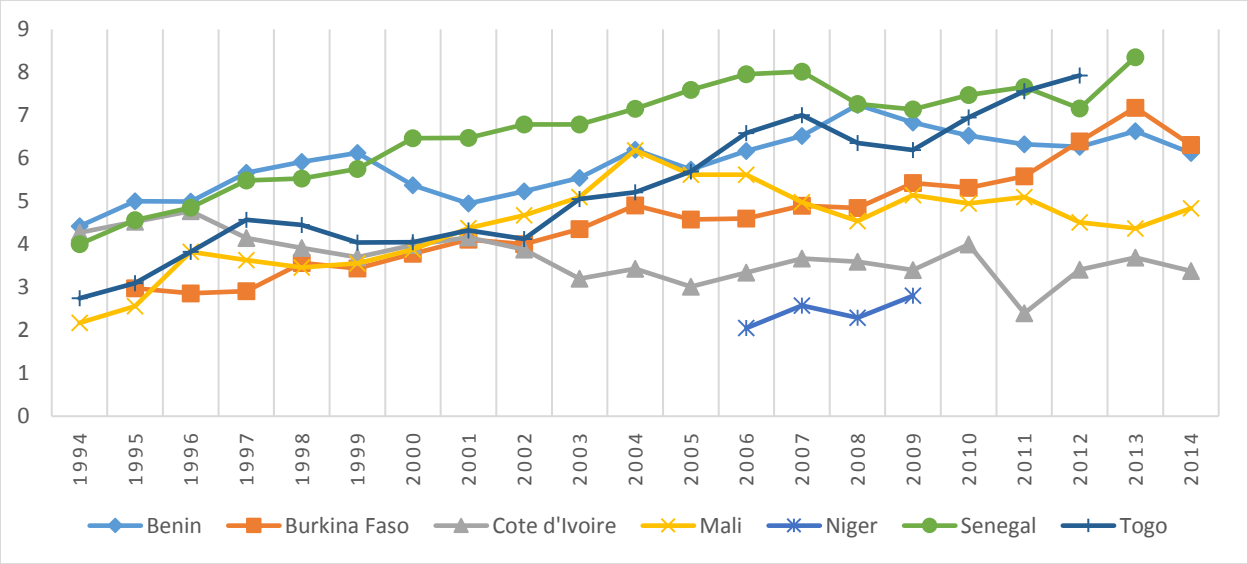
The data presented in Figure 2a below shows that VAT receipts have been increasing over the 1994-2014 period in WAEMU countries. Apart from its lead performance in overall tax revenue mobilization, Senegal historically collected a larger share of VAT than other WAEMU members. Cote d'Ivoire also used to be among the best performers within WAEMU in the early 1990s. Since then, Cote d'Ivoire has been performing poorly. Together with Niger, the country has been mobilizing some of the lowest levels of VAT revenue (as a share of GDP) from 2002 onwards. The case of Niger is interesting because the VAT revenue mobilized in the country remains very low, despite its imposition of the region's highest standard VAT rate at 19%. In fact, the economic literature on VAT actually

[9] Member States which do not apply VAT substitute it for their system of turnover taxes, in accordance with the harmonized VAT regime policy of WAEMU. This is stated by Decree 02/98/CM/UEMOA on tax law harmonization of Member States (UEMOA, 2014).
[10] The flat (single) VAT rate was effective as of 1996.
[11] Tait (1988) reports that the VAT rate was 25% by January 1991.
[12] The 20% VAT rate refers to the rate in 1991. There are no precise dates available for VAT introduction in Senegal and the tax evolved from limited manufacturer's turnover tax with credits (Tait, 1988).
[13] VAT adoption dates and current rates for countries of the world are available in Ernst and Young (2015) and RMCD (2016).

finds an inverse relationship between VAT rate and compliance. That is, the higher the standard VAT rate, the lower businesses will be willing to pay the tax - negatively affecting VAT revenue at the end (Christie and Holzner 2006; Agha and Houghton, 1996).[14]

As Benin is concerned, the country did as good as Senegal up to the late 1990s. The performance of Benin started to lag slightly behind Senegal as from the time the common external tariff was introduced in WAEMU (i.e. January 1st 2000). Finally, Burkina Faso and Togo show a positive trend in terms of VAT revenue mobilization. Over the period from the early 1990s to early 2010s, the two countries have evolved from the region's lowest levels of VAT mobilization to an above average performance. In particular, VAT revenue from both countries improved from about 3 to more than 7 % of GDP in 1994-2013. In the next sessions we elaborate more about the dynamics of tax revenue in Benin and Burkina Faso.

Figure 2a: VAT receipts comparison in WAEMU (% GDP)



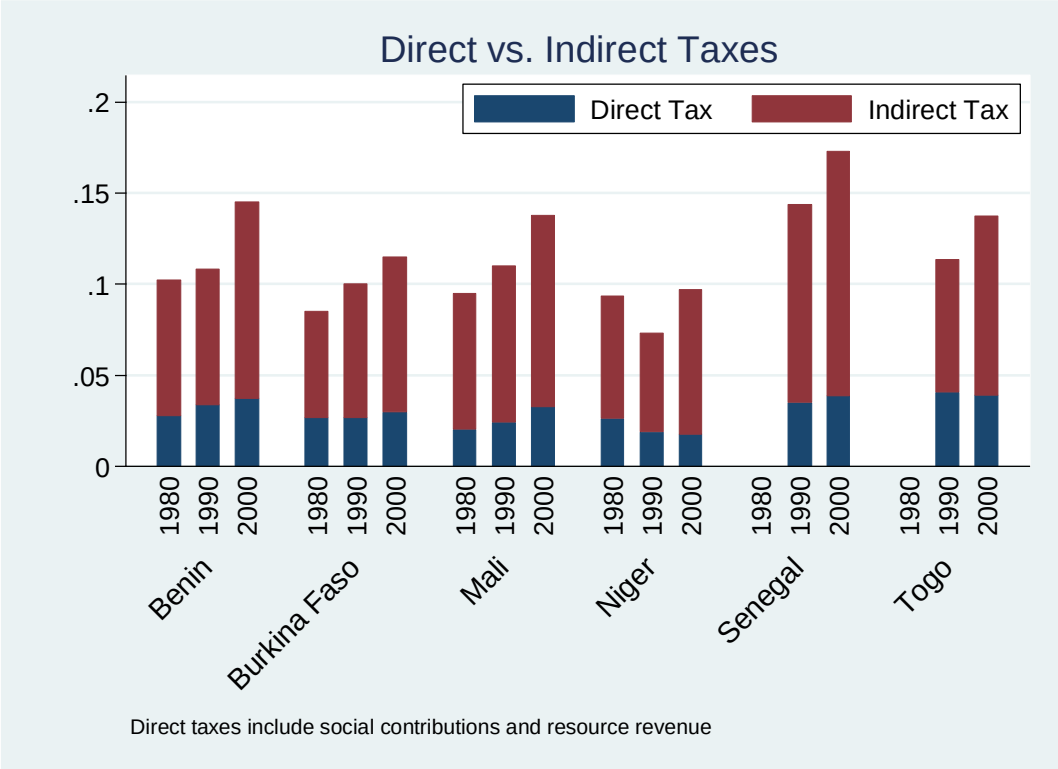
Source: using VAT data from BDSM-UEMOA

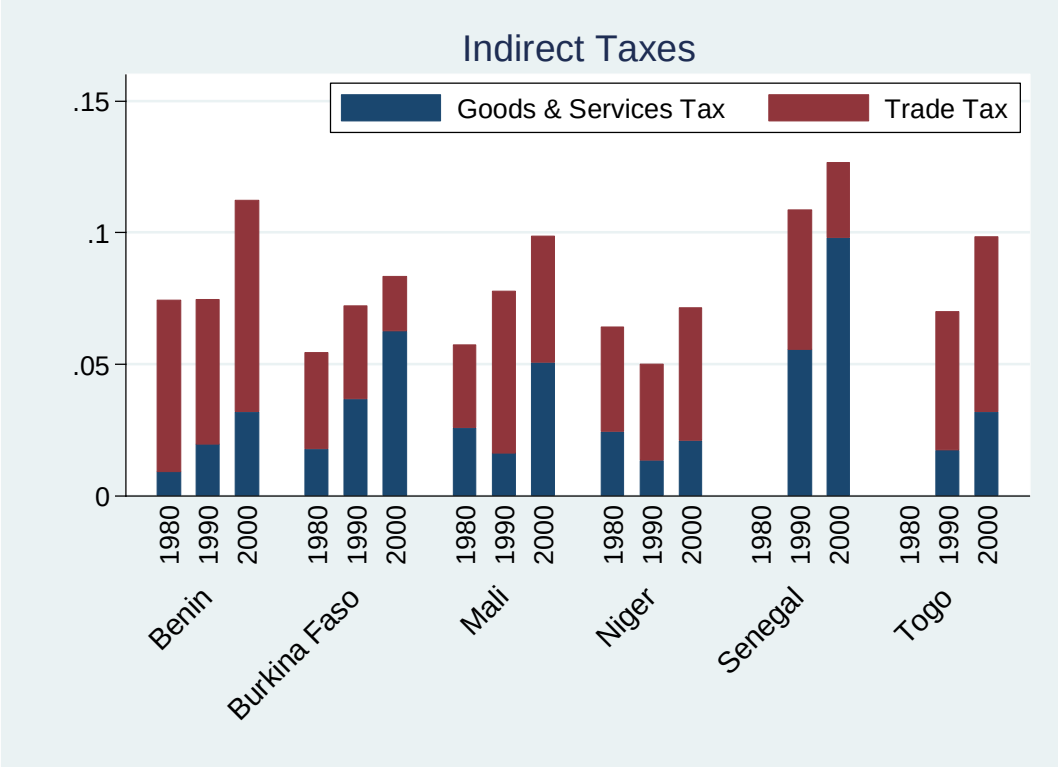
Note: Guinea-Bissau is not included in this figure since it has not yet adopted VAT. In fact, it is the only country of the eight WAEMU Member State that has not yet done so (IMF, 2013). This also partly explains the country's poor performance in tax revenue mobilization (also see Figure 1)

The data presented in Figure 2a may, however, hide an important feature of tax revenue collection in WAEMU. In particular, the bottom panel of Figure 2b shows that some WAEMU countries, particularly Benin and Togo derive most of tax revenue from trade taxes, even if taxes on goods and services are increasing overtime. This situation makes government policies vulnerable to trade shocks. As such, these countries need to address this vulnerability problem by better developing their domestic tax system.

[14] For more discussion on the issue of VAT compliance and evidence from the empirical literature, see section 3.4.

Figure 2b: Composition of tax collection in WAEMU





Sources: using ICTD Central Government revenue database

2.2. Tax reforms in Burkina Faso

Background on Tax policy in Burkina Faso

The first tax code of Burkina Faso was adopted in 1965 on the basis of the colonial tax system. Since then, numerous tax reforms have been introduced, including the adoption of VAT. In fact, taxation in Burkina Faso was marked by four key periods: namely; the period of 'independence' (1961-1965); the period of 'Garangose' (1966-1975); the period of the 'revolution' (1984-1987); and the period of 'structural adjustment' to the present (since 1991).

The initial period from the beginning of independence (1961-1965) was marked by major legislative reforms that transformed state and local taxes, creating various new taxes. In order to attract international private investors, in 1961, the State formulated a system that gave them tax and customs advantages.[15] Reforms during this period encompassed various reference documents such as; *customs code* (1962), *registration code* (1963), *tax code* (1965), *investment code* and *code of mining investments*. These documents are still being used as a reference in the country.

The period of "Garangose" (1966-1975) refers to the period characterized by the implementation of economic and financial austerity policies in Burkina Faso[16] by the Minister of Finance and Trade, Marc Tiemoko Garango.[17] Major tax reforms have been put in place and have essentially consisted of the repeal of the progressive income tax and property taxes, the establishment of the 'Single Taxation on Salaries and Wages' (de l'Impôt Unique sur les Traitements et Salaires - IUTS), the use of the 'patriotic contribution' for the restoration of the internal and external credits of the State, the modification of the rates of several taxes, and the establishment of a research and audit office. An attempt to introduce VAT was observed during this period and the idea was to replace the 'Turnover Tax' (la Taxe sur le chiffre d'affaire - TCA), which was acquired during the colonial period. It has failed because of the practical difficulties of its implementation during this period. Indeed, during this period, the human resources of the tax administration were very limited - making it difficult to institute VAT.

[15] Economic policy in the aftermath of independence was mainly inspired by that of France. Thus, the first republic adopted Law No 9/62/AN which authorized it to create Societies of Mixed Economy (SEM). A SEM is a public limited company in which the State or the public authority intervenes as a shareholder and on which it intends to exercise an internal administrative control of commercial law (Zagré, 1994).

[16] Burkina Faso was previously known as Upper Volta.

[17] Indeed, at the takeover of Colonel Sangoulé Lamizana (03 January 1966), the economic and financial situation of the country was challenging. The overall deficit was more than CFAF 4.5 billion (Zagré, 1994). In order to re-establish this situation Marc Garango, a first-class military steward, was entrusted with the task of developing a vigorous financial recovery program. After a difficult application of the government's decisions, the balance sheet at the end of 1966 was unsatisfactory because the overall deficit increased to CFAF 4.6 billion (Zagré, 1994). So drastic measures were taken to reduce expenditure such as the dismissal of civil servants, the reduction of the retirement age, the abolition of functional indices, and so on. Financial recovery at that time was achieved with a genuine national budget and a realistic framework for economic and social development, with no external aid - except for aid from France which was not included in the budget (Garango, 2008).

The economic independence created during the "Garangose" period, led to an imposing presence of the State in all spheres of the economy.[18] Thus, in 1975 about 98% of enterprises and companies enjoyed large exemptions from taxes and customs duties (Zagré, 1994).[19]

The period of the revolution (1984-1987) was marked by the reign of President Thomas Isidore Sankara who led the country with revolutionary ideology. The reforms of the revolutionary government consisted of the creation of a tax on built-up properties, a one-year repayment of rent by the landowners for the benefit of the State, the adoption of an exceptional contribution of 1/12th of salary for staff in categories A and B and 1/24th for the other categories, deductions on wages (reduced wages and benefits) paid to a so-called *revolutionary solidarity* fund.[20]

Finally, the period since 1991 is the one that was marked by the democratization process and more collaboration of the country with international and regional organizations (IMF, World Bank, WAEMU, etc.). Indeed, fiscal reforms in the early 1990s were characterized by the Structural Adjustment Programs (SAPs) instituted by the World Bank and the IMF. Among other things, the period saw; changes in the method of collecting taxes, the abolition of several local taxes, the simplification of the method of liquidation of patents, the replacement of personal tax by the residency tax (*la taxe de résidence*) which has a broader base, the introduction of so-called *global tax* ('*taxe de fiscalité globale'* which relates to contributions of the informal sector, livestock sector, etc.), the introduction of several deductions following the entry into force of the WAEMU's Common External Tariff (Tarif Extérieur Commun - TEC); and finally the introduction of VAT.

VAT reforms in Burkina Faso

Among all the reforms that have taken place since the 1990s in Burkina Faso, the introduction of VAT appears to be one of the most consequential. It was established by the Law No. 04/92/ADP of December 3, 1992 and entered into force on January 1, 1993. Since its introduction, VAT has played an important role in the mobilization of tax revenues in Burkina Faso (see Figure 4). The share of VAT in Burkina Faso's overall tax revenues has increased over the years and reached 41.8% in 2015 from just 18.21% of total tax revenues in 1994 (Public Treasury, 2017). The objective of the VAT (whose introduction was supported by the IMF) was to modernize the tax administration, broaden the tax base, improve the distribution of the tax burden without discouraging production through incentive effects on investment, and the encouragement of exports via the mechanism of refund of

[18] For the banks, the State became creditor of 2,240 million CFA francs in 1970, when it had a debt level of 130 million at the end of 1965. Ordinary revenue increased by more than 30% thanks to an increase in indirect taxes (Zagré, 2014). In 1974, the State had accumulated CFAF 9.3 billion in its deposits with the BCEAO, i.e. almost 75% of the current receipts of the Budget of the same year (Zagré, 1994).

[19] Often, state owned enterprises receive various tax exemptions.

[20] However, the revolutionary administrative division did not always take into account the financial autonomy of the municipalities. Indeed, 94 communes out of a total of 102 were unable to draw up their annual budget because of the lack of a consistent base (Ouattara, 2007). However, the fiscal reform put in place seems to increase this lack of financial autonomy. This is the tax reform marked by the elimination of the fixed income tax (l'Impôt Forfaitaire sur le Revenus - IFR) which was of colonial origin and affected mainly the peasant population. But as a result of this abolition, the state regularly awarded a subsidy to the provinces even if this subsidy did not cover the shortfall. The appropriation of certain municipal powers by ministerial departments was accompanied by the monopolization of the revenue intended for their exercise. For example, the Ministry of Health was responsible for managing the proceeds from the sale of vaccination records while the advertising department was responsible for advertising taxes (Ouattara, 2007).

the VAT credit to exporting companies (Zagre, 1994). Indeed, exports are subject to zero rate for the refund of VAT levied on inputs in the manufacturing process.

Any transaction between two separate legal entities is subject to VAT, except payment of salaries. In addition to employees, there are a large number of people who are exempt from VAT in Burkina Faso. These include the informal sector; farmers, stockbreeders, fishermen, the sale of unprocessed crop, livestock or fishery products; international air transport; artists for the sale of their works of art (excluding articles of goldsmiths, jewelers, and articles manufactured by artisans or industrialists); etc.

Initially in 1992, VAT had two rates in Burkina Faso: a reduced rate of 10% and a standard rate of 15%. The 10 percent reduced rate was mainly for basic necessities. In order to facilitate its collection and make it more efficient, a single rate of 15% was adopted later in 1994. In the context of harmonization within the UEMOA, this rate was increased to 18% in 1996. Harmonization of the rate was intended to ensure greater coherence in the tax systems of the member states, to improve the return on taxes and to promote equal treatment of economic operators within the Union. It also makes it possible to limit the effects of tax competition between states, a phenomenon detrimental to the development of trade and capital mobility within the union.

In the past, VAT payers were assigned a 'VAT number' or an 'import number' in Burkina Faso. A taxpayer could then have two numbers at the same time making the process more difficult. The adoption of the Unique Fiscal Identifier (*Identifiant Fiscal Unique* - IFU) has helped to remedy this problem.[21] In addition, Act No. 050-1998/AN of 20 November 1998 specifies the obligation to use cash registers by any taxpayer liable to VAT and engaged in sales of goods. Further, the law No. 054-2004/AN of 16 December 2004 requires the declaration by the customs agents of the identity of their customers.

VAT has many advantages for both the taxpayers and the tax administration. These include the simplicity of tax reporting and controls as well as increased tax revenues. Since it only affects the value added, it also eliminates the cascading effect on prices unlike other consumption taxes.

Despite its many advantages, the VAT in Burkina Faso suffers from deficiencies and dysfunctions and could have perverse effects on the development of economic activity. These include the importance of exemptions for a wide range of products and services. Social reforms have consisted of extending the list of exemptions. For example, the 2013 Finance Act permitted exemption from VAT on imports and sales of unprocessed, fresh, or frozen food products for consumption.

However, other reforms made it possible to charge VAT on certain products which were formerly exempted. For example, VAT for commercial or industrial operations carried out by the State, local authorities and their public establishments were formerly exempted. This measure establishes fair competition between the latter and private businesses operating in the same field. The amendment introduced also complies with the provisions of Articles 7 and 22 (5) of Decree 02/98/cm/UEMOA,

[21] As World Bank (2017) notes, the Center for Business Formalities (CEFORE) was created by Decree No. 2005-332/PRES/PM/MCPEA/MFB/MTEJ of June 21, 2005. Following the decree and the operationalization of CEFORE, professional license (carte professionnelle de commerçant, at the Ministry of Commerce) and fiscal identification (or identifiant financier unique, IFU, at the Direction Générale des Impots) started to be processed with a single application form. This form must be submitted to complete company registration with the Trade Register and Personal Credit (RCCM) of Burkina Faso.

which harmonizes the laws of the Member States concerning VAT. In 2008 it was extended to cement importers. The tax payable on cement imports will be collected at one time from the customs cordon on a profit margin determined by the tax authorities. This measure aims to guarantee the accessibility of cement and also limits the loss of VAT revenue. The VAT will be collected from producers and all players in the distribution chain (MEF, 2008).

Other deficiencies concern the taxation of bank interest on VAT which seems inappropriate for investments. The application of a VAT deduction mechanism and the inadequacy of the current mechanism for refunding VAT credits seem to indicate the weakness of VAT enforcement. The 2009 Finance Act eliminated the obligation to withhold VAT on purchases of goods and services from state-owned companies and certain semi-public companies.

It should also be pointed out that the neutrality of VAT remains undermined by the difficulties involved in its application. In particular, since its recovery is easier at the level of the customs cordon than at the internal level, it tends to weigh more on imported goods. Similarly, its partial application and the importance of fraud reduces its neutrality (Chambas et al., 1999). On a related point, VAT is implemented in Burkina Faso, with little coordination between the custom union service and 'Direction General des Impôts' (DGI). Any credible reforms aiming to improve VAT in Burkina Faso should address this coordination issue, including their collaboration with the National Statistical office ('Institut National de la Statistique et de la Démographie' - INSD).

2.3. Tax reforms in Benin

Background on Tax policy in Benin

Benin has carried out a range of major reforms on tax policy in the early 1990s which also marked a successful political transition from a dictatorship regime to a democratic one. Among these tax reforms was the introduction of VAT with a single rate and few exemptions. Other reforms also included simplification on personal income tax as well as small business taxation.

Previously, in fact since independence from France in 1960, most countries in the region followed a 'forfait' tax system for small and micro businesses to minimize their administrative tax-collection costs. The reform on small and micro businesses in Benin followed a simplified regime of Single Business Tax (*Taxe Professionnelle unique*) since 1994. This tax is charged on the basis of commercial rental value of the places where firms operate. However, since the year 2000, Burkina Faso and many other WAEMU countries (e.g. Côte d'Ivoire, Mali, Niger, Senegal, and Togo) charge a 'presumptive tax' that is calculated based on the turnover of businesses (Fossat and Bua, 2013).[22]

Benin also reduced its corporate profit tax in the early 1990s. These policy reforms were also accompanied by major institutional reforms in tax administration. These involved the setting up of large taxpayer units in addition to changes in the tax collection processes, where the collection duty was shifted from the treasury department to the tax administration office. Benin's successful tax reforms of the early 1990s were adopted as a model in various African (especially francophone)

[22] In Benin, the tax is based on the rental/commercial value of businesses. This is a legacy of the French tax system. Article 168 of the General Tax Code of France takes into account rental value of economic agents residence…see https://www.imf.org/external/pubs/nft/1998/tlaw/eng/ch12.pdf

countries. As Fossat and Bua (2013) note, Benin was quite an exception to other francophone SSA countries in terms of its tax administration in the early 1990s (i.e. period of major tax reform). The country was undergoing through a 'democratic renewal' and the IMF delivered major support to the country's effort to enhance its tax administration.

As several IMF country reports and mission statements of the pre-reform era show, tax administration in most Francophone African countries was in dire situation.[23] There were problems in overall organizational structures of tax administration. In addition, there were inefficiencies and capacity gaps in setting tax policy, planning, service delivery to taxpayers, supervisory and audit programs, etc. Apart from the organizational weaknesses within tax administration, there were also other institutional problems. Tax reforms sometimes received weak political support and commitments from political leaders and tax administration officials. Further, recurrent reshuffling on heads of finance and revenue ministries as well as broader political instabilities added to the difficulties of introducing major tax reform and their successful implementations. Often, there were also financial, human resource and other capacity constraints to properly implement reforms (Fossat and Bua, 2013).

Before the reforms on the organizational structure of tax offices in Benin in the early 1990s (of which the country was a pioneer in WAEMU), tax offices in Benin as well as most other countries in the region were mainly set up across geographical partitions. Although this was done with the good intention of being close to taxpayers (i.e. 'proximity') it, however, led to the duplication of tax offices all over the country in an inefficient manner. For this reason, the country resorted to an organizational structure based on the type of taxpayers instead.

VAT reforms in Benin

Among the major innovations in the Beninese tax regime was the introduction of VAT by Law N ° 91 005 of 22 February 1991. The standard VAT rate is 18%. Benin's VAT is applied to legal entities that carry out production processes in industrial, commercial, agricultural or artisanal activity. It is also applied to natural (or legal) persons who regularly (or occasionally) buy goods to resell them (EGM, 2015).

Benin's customs services apply VAT as goods and services transit in to the country for consumption. VAT is also charged on sales, as final goods and services are delivered to consumers. Similarly, real estate works are also subject to VAT when the construction work is executed. VAT registered businesses in the service sector will also charge the tax at the moment of delivery of their services to their customers. The introduction of VAT was complemented by other successive reforms. One of these key follow-up reforms was the Finance Act of 1994. This reform extended VAT to the important retail sectors of the country.

[23] For a detailed summary of IMF tax reform support activities in Francophone Africa, see Fossat and Bua (2013). The later authors provide a good summary of voluminous reports prepared from IMF's technical assistance missions undertaken by IMF's Fiscal Affairs Department as well as its regional technical assistance centers. The study covers 19 sub-Saharan African Francophone countries, namely: Benin, Burkina Faso, Burundi, Cameroon, Central African Republic, Chad, the Comoros, Democratic Republic of the Congo, Republic of Congo, Côte d'Ivoire, Djibouti, Gabon, Guinea, Madagascar, Mali, Mauritania, Niger, Senegal, and Togo.

Benin's VAT system also involves a deduction system.[24] VAT-liable individuals are allowed to deduct from the amount of VAT due on their transactions. This applies to the VAT which they invoiced or paid at the time of purchase or import. The deduction of VAT incurred in the purchase of goods and services will be subject to the compliance with the requirements of the tax code. Transactions that are subject to VAT also require monthly declarations (EGM, 2015).

Although the introduction of VAT has been a significant innovation and source of revenue for the Beninese state, the reality for the private sector is not fully positive. This is because businesses that are subject to VAT payment start facing new constraints compared to what they had before the advent of VAT. One such example is the potential impact of VAT on the competitiveness of firms. In a developing country such as Benin, characterized by large informal sector, firms in the formal sector that pay VAT may struggle to compete with other smaller firms and firms in the informal sector which produce substitute goods/services but don't pay VAT. Indeed, formal firms in Benin often mention the presence of a large informal sector as an important constraint to the development of their activities (Dayé et al, 2016). Further, these firms may also face additional managerial and material costs as they will require certain changes in their operational activities relating to strict record keeping and routine reporting of payments. Also, the process of first collecting VAT charges and then making deductions later on comes up with big VAT credits. Note, however, that these costs can be substantially minimized if an effective electronical VAT system were in place.

In addition, VAT payer businesses which dispute the validity of their VAT charges have to constitute a bond - according to Article 1108 of the tax code. The bond will be paid to the Beninese public treasury and will be equal to the amount of the VAT charges. However, even if a VAT paying firm succeeds in showing that the amount of tax levied on it is inappropriate, the security is not quickly returned back to it. It is rather kept as a "tax credit" to be claimed in future years by the firm.[25] As Kipocheme (2005) notes, these costs of VAT may discourage long-term investment and slow down economic activities - and thereby future tax revenue.

Apart from the introduction of VAT, the early 1990s saw the establishment of a large tax payer office, the formation of simplified tax regimes for small taxpayers, and the process of modernization regarding tax collection and audits. The VAT system itself had a good design - where it involved a single standard rate, a high registration threshold that took capacity limitations of tax administration in to account, narrow exemptions and a comparatively broad tax base. Further, there was also a VAT refund system (Bodin and Koukpaizan, 2009). In short, Benin's tax reforms of the early 1990s have been used as models and were replicated in many other francophone SSA countries.

[24] Benin's General Tax Code (*Code Général des Impôts* - CGI) defines the systems and conditions of taxation. It also details the process of liquidation and recovery of the taxes paid by businesses. The CGI is also yearly amended by the country's Finance Laws.

[25] In a VAT system where the tax is charged on the value-added at each stage of the production chain (i.e. VAT on intermediates) rather than the final product, VAT registered firms receive 'tax credits' whenever they use intermediate commodities that have been taxed with VAT. This will enable governments to indirectly tax informal businesses (i.e. firms that are not registered to pay VAT). That will happen since these businesses utilize VAT charged (more costly) inputs but unlike the formal businesses never receive a VAT 'tax credit' to compensate for it (see also Boadway and Sato, 2009).

After first setting up tax offices for large taxpayer enterprises, Benin (and also Burkina Faso) moved on to set up specialized tax offices for medium-sized enterprises (note that VAT at its introduction in Benin, Burkina Faso and other SSA countries was assigned relatively 'high' level of turnover thresholds not to overwhelm the weak capacities of respective national tax offices). Apart from the creation of tax offices for large and medium sized enterprises (i.e. those above the VAT threshold), similar specialized tax offices were created to oversee the administration of small businesses and microenterprises (i.e. for those below the VAT threshold). These small and microenterprise firms often represented the largest majority of businesses in the region (usually constituting somewhere between 80-90% of all businesses). These segments of firms, despite their large number, actually contribute a small share of the overall tax revenue (often below 5% of domestic tax revenue). Yet, their size and way of operation renders high levels of compliance and administrative costs to tax collectors (Fossat and Bua, 2013). Therefore, upgrading the efficiency of tax collection on these segment of businesses will help ease the burden on tax administration and also boost tax revenue. Further, creating an ideal tax environment might help to 'formalize' the operations of small enterprises and also assist their natural growth in to medium enterprises overtime, i.e. eventually qualifying for VAT payment.

Another useful recent development (especially in relation to customs reforms) is the extension of computerized task management to all customs offices in the country. The introduction of VAT has also enhanced the level of tax collected at customs. However, there had been some problems of corruption and fraud especially at the customs processes. In light of this, Benin has strengthened its customs administration and tried to apply tax to all transaction values of imports (i.e. fighting deliberate undervaluation/underreporting of imports which are meant to aid tax avoidance and smuggling). However, unlawful tax avoidance partly persists and Benin has to continue tackling corruption and misuse of exemptions (i.e. *régimes suspensifs*) to avoid tax payments (IMF, 2004).

2.4. VAT's contribution to revenue mobilization efforts in Benin and Burkina Faso

If we look at the progress of revenue mobilization over recent years in Benin and Burkina Faso, either from i) all tax instruments, in general or ii) VAT, in particular; we notice the following:

Trends in overall revenue mobilization

- ✓ Overall tax revenue has shown considerable improvement, although it is still far below the level that would be ideal especially given the huge development financing needs facing the two countries. For instance, tax revenue in Benin increased from a meager 8.4% of GDP in 1991 to 16.3% GDP (i.e. nearly double the 1991 level) by 2013.
- ✓ Similarly, in Burkina Faso, tax revenue increased from 9.7% of GDP in 1994 to 16.5% in 2013. This also shows a huge revenue gain (close to 7% GDP as additional tax revenue) in a span of 20 years.

Trends in VAT revenue mobilization

- ✓ The introduction of VAT has been significantly beneficial to both Benin and Burkina Faso. By 2013, i.e. twenty or so years after its introduction in early 1990s, VAT accounted for 7% of GDP as tax revenue for Benin and 6.2% of GDP as tax revenue for Burkina Faso.
- ✓ While the progress in VAT revenue gain were witnessed gradually in Burkina Faso (rising slowly from about 3% in 1994 to over 6% by 2012), the VAT gain in Benin were largely witnessed in the immediate years after VAT adoption (i.e. early 1990s). Progress in improving VAT revenue (as % GDP) has been slow since mid-1990s.

Figure 3: Total Tax Revenue & VAT Revenue in Benin

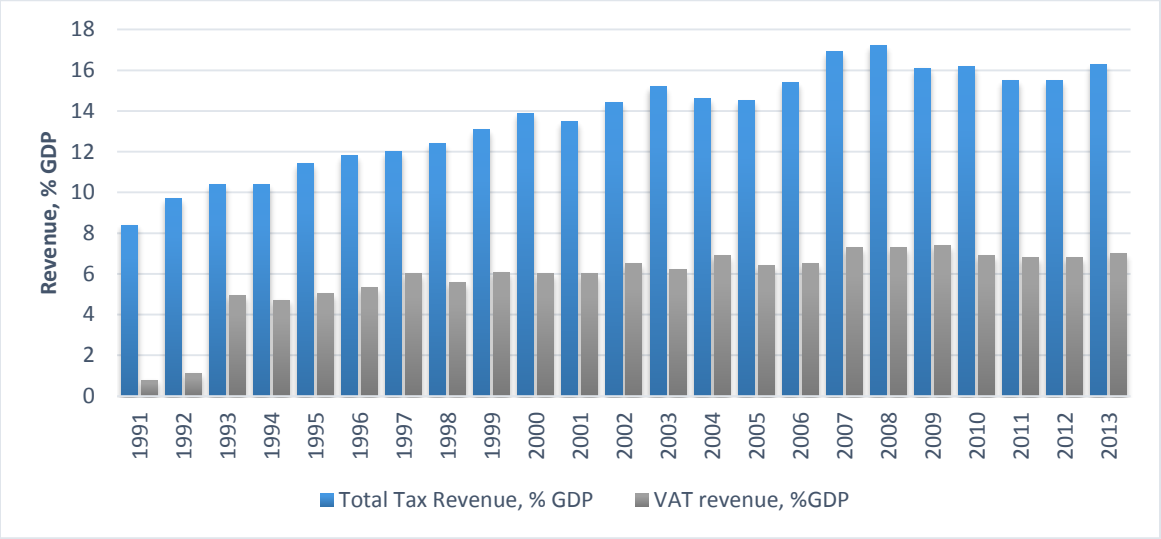
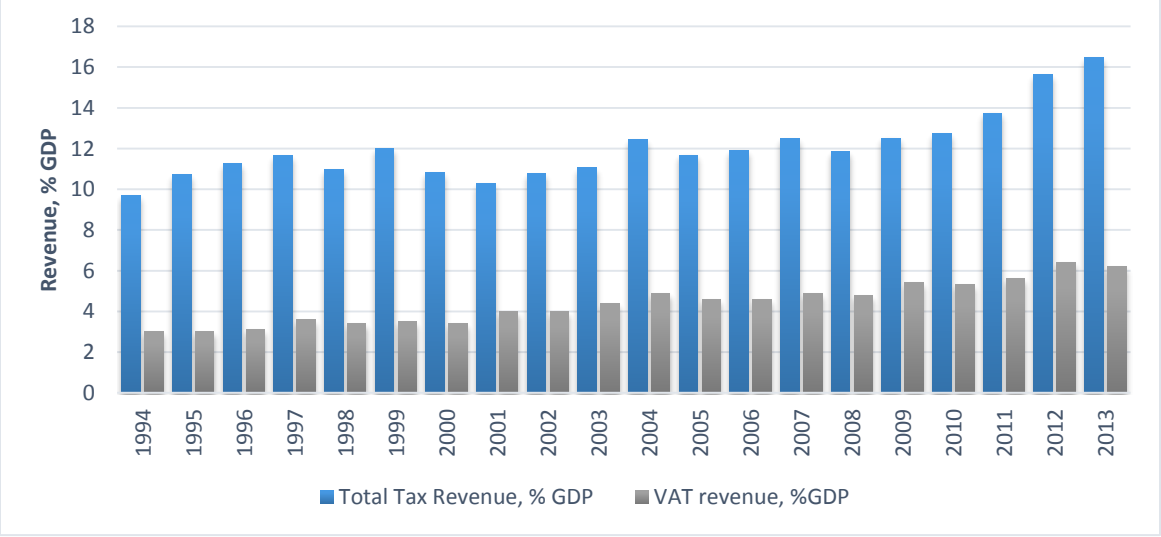


Figure 4: Total Tax Revenue & VAT Revenue in Burkina Faso

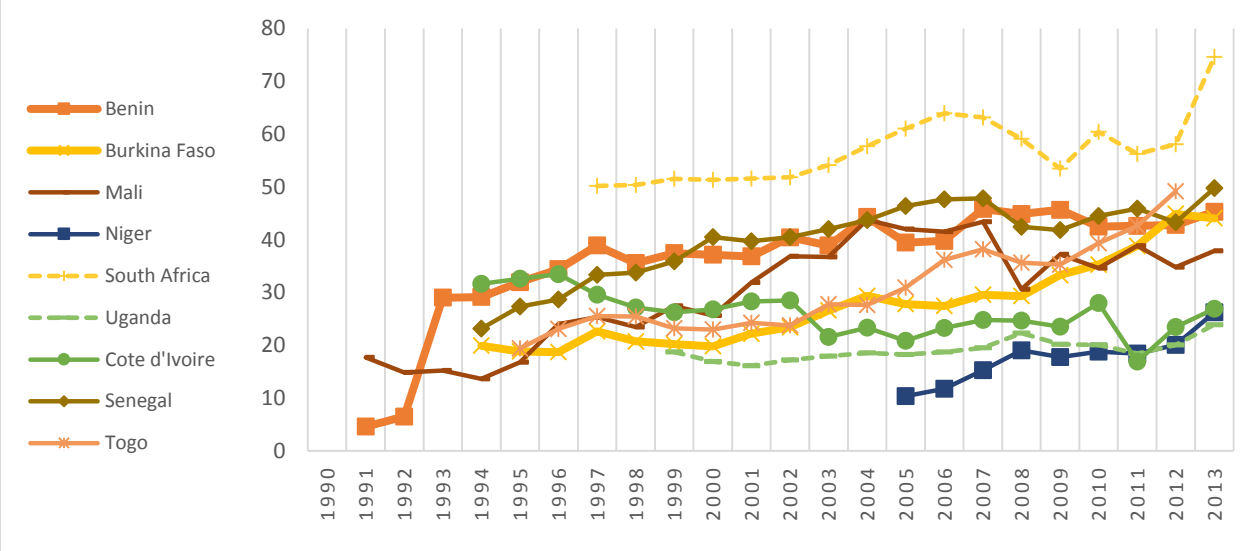


Source: using IMF WoRLD and BDSM-UEMOA data

VAT Gap in Benin and Burkina Faso

Since the introduction of VAT in Burkina Faso in 1992, VAT gap (the difference between potential and actual VAT collection)[26] has been on a downward trend over the years. As the following figure shows, VAT gap has remained high (well over 75%) until the early 2000. Since then, VAT gap has been declining and it has reached below 60% since 2012. However, this level of VAT inefficiency remains high and makes Burkina Faso one of the weakest performer among the partner countries of the Belgian Cooperation (Godin, Houssa and Megersa, 2017). Similarly, in Benin, VAT at its introduction in 1991 displayed significant gaps. In fact, through the 1990s, VAT gap stood over 60% of its liability. This has slightly decreased over the years and by 2013, the VAT gap is marginally over 50%. What explains these large inefficiencies in Benin and Burkina Faso? Before addressing this questions we analyze the sources of VAT revenue growth in both countries.

Figure 5: VAT efficiency comparisons



Source: using WB WDI, IMF WoRLD and BDSM-UEMOA data

Decomposing growth in VAT revenue (consumption growth vs. efficiency gain)

Theoretically, countries would see rise in their VAT revenue following either:

i) ***Improvements in efficiency of VAT (also known as C-efficiency)***[27]; which often relates to decrease in

- VAT compliance gap (i.e. when firms that should pay VAT actually start to comply in paying the tax) or/and
- VAT policy gap (i.e. when problem of rate differentiation and/or exemption in the tax code are addressed), etc.

[26] The potential VAT (total VAT liability) is derived from the product of the standard VAT rate and aggregate final consumption of goods and services (see Keen, 2013).
[27] For more on a general definition of VAT-efficiency as well as formulation of C-efficiency, see Keen (2013).

ii) ***Growth in consumption***;
As countries witness economic growth, they also often see rising levels of consumption (i.e. expanding tax base). This will provide larger VAT revenue, assuming the standard VAT rate is applied to the growing tax base.

Figure 6 and 7 below show that in both Benin and Burkina Faso, improvements in efficiency of VAT collection has been responsible to bigger share of the growth in VAT revenue, compared to consumption growth. This fact, thus, suggests that successful reforms that are capable to reduce VAT inefficiencies will help improve DRM in both countries.

Figure 6: Decomposition of change in VAT revenue - Benin

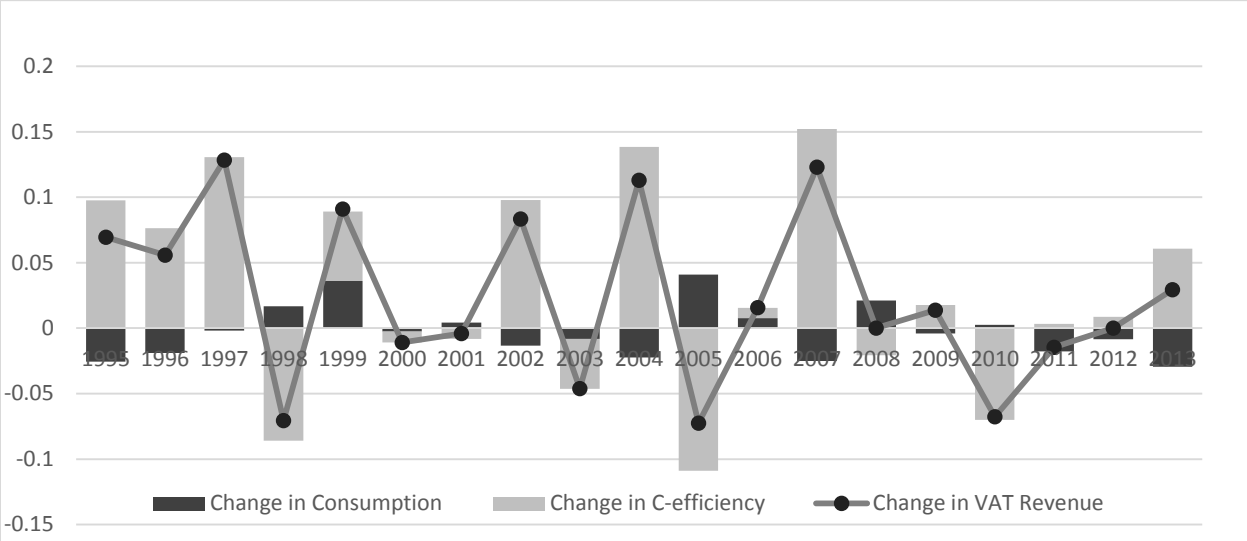
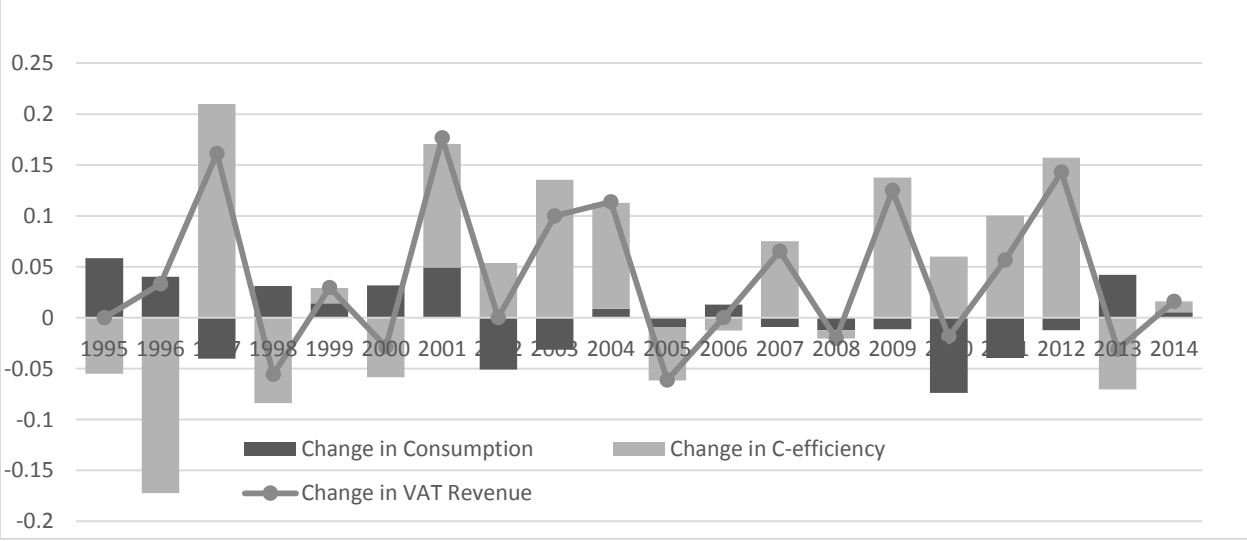


Figure 7: Decomposition of change in VAT revenue - Burkina Faso



Source: using WB WDI, IMF WoRLD and BDSM-UEMOA data

3 | Understanding the performance of VAT in Benin and Burkina Faso

This section presents an in-depth analysis on VAT in Benin and Burkina Faso. We concentrate on three issues. First, we discuss the sources of VAT revenue from two perspectives. On the one hand, we present a brief analysis of VAT liabilities that is related to different types of expenditure: household, government, gross fixed capital formation; and a net adjustment term obtained as residual. Additionally, we discuss the sectoral sources of VAT revenue. We distinguish over 20 aggregate economic sectors that are defined by the statistical offices in each of the two countries, namely;

- Agricultural products
  - *Food crops*
  - *Cash crops*
- Livestock products
- Silvicultural products, Fishing, Hunting
- Extraction products
- Foodstuffs
- Cotton, textiles and clothing
- Petroleum products and chemicals
- Glass, pottery and building materials
- Paper products, publishing, printing
- Articles of wood and metal
- Electricity, gas, water
- Construction work
- Trade
- Hotel and restaurant services
- Transport, Post and Telecommunications
  - *Transport services*
  - *Postal and telecommunications services*
- Financial services
- Other commerce Services

Second, we decompose VAT into two terms: the *policy gap*; and the *compliance gap*. The 'policy gap' emanates from the fact that VAT is rarely implemented on a uniform rate on all consumption. As we noted above, there are various exemptions and deductions in the legal tax codes of many countries. Keen (2013) refers to this as the 'policy gap'. It captures the impact of the deliberate policy amendments made (by the government or tax authorities) to the standard VAT rate applied to various classes of taxable items. This policy gap will assume a value of zero in the 'world' where the VAT is applied to all consumption at a single uniform rate. On the other hand the *compliance gap* originates from the imperfections in the implementation of the existing VAT system. In particular, it captures the amount of VAT liabilities that were not collected due to tax non-compliance. It basically captures what is left of the uncollected VAT liabilities that cannot be explained by the 'policy gap'. This gap will be zero if the VAT is perfectly implemented. See Annex 1 for technical details.

Third and finally, we identify the sources of 'compliance gap' in about 20 economic sectors. The analyses of the second and third issues provide guidance for the design of appropriate reforms aiming to improve DRM in Benin and Burkina Faso. For instance, if the policy gap is more important, then policy makers should give more attention to reforming the VAT law. On the other hand, if the compliance gap plays a dominant role, then policy makers should focus more on reforms aiming to improve the efficiency related to the implementation of VAT.

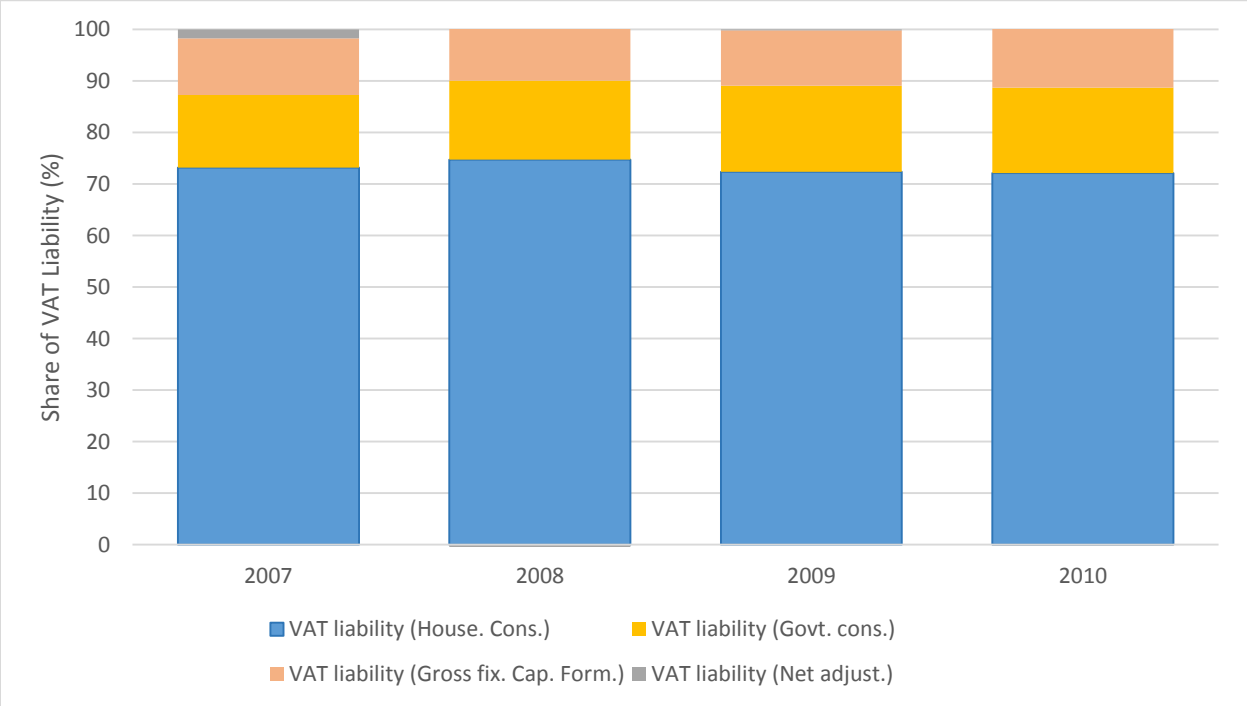
3.1. Sources of VAT revenue in Benin and Burkina Faso

3.1.1. VAT Liability (potential): by expenditure aggregates

VAT could be potentially collected from all streams of consumption. However, often there are exemptions on consumption by the public sector and that of gross capital formation by non-household, non-government sectors (CPB, 2013). In assessing the true potential of VAT in an economy it, therefore, becomes useful to see the share of final consumption by households, final consumption by the public sector, and gross capital formation.

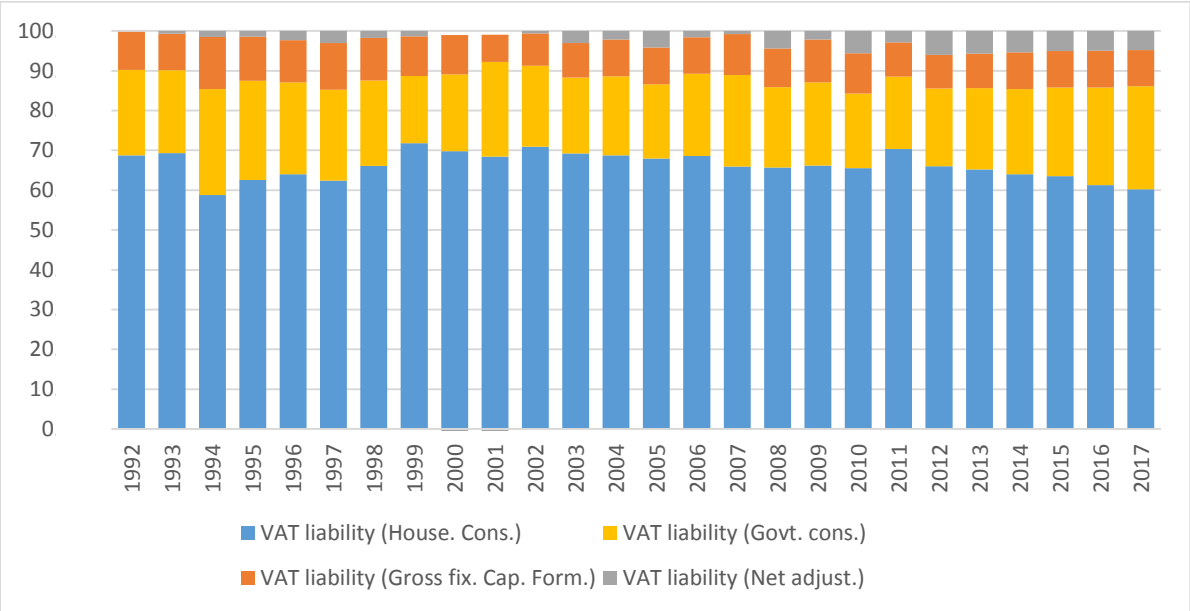
In the case of both Benin and Burkina Faso, Household consumption takes the big chunk of the aggregate sectoral break-down. Theoretically, household consumption accounts for over 60% and 70% of VAT potential in Burkina Faso and Benin, respectively. For comparison, a study on the economic effects of VAT and its rate structure in EU countries by the Netherlands Bureau for Economic Policy Analysis estimates that 60 % of all VAT liability is accounted by households in 27 EU Member States. It is interesting to see that Benin and Burkina Faso, despite having economies that greatly differ in structure and level of development from EU economies, still largely depend (to a comparable degree) on the household sector for VAT revenue potential. Household consumption's dominant share of VAT liability in Benin and Burkina Faso is distantly followed by the public sector and gross fixed capital formation.

Figure 8: Sectoral share of VAT Liability in Benin (%)



Source: using INSAE data

Figure 9: Sectoral share of VAT liability in Burkina Faso (%)



Source: using INSD data

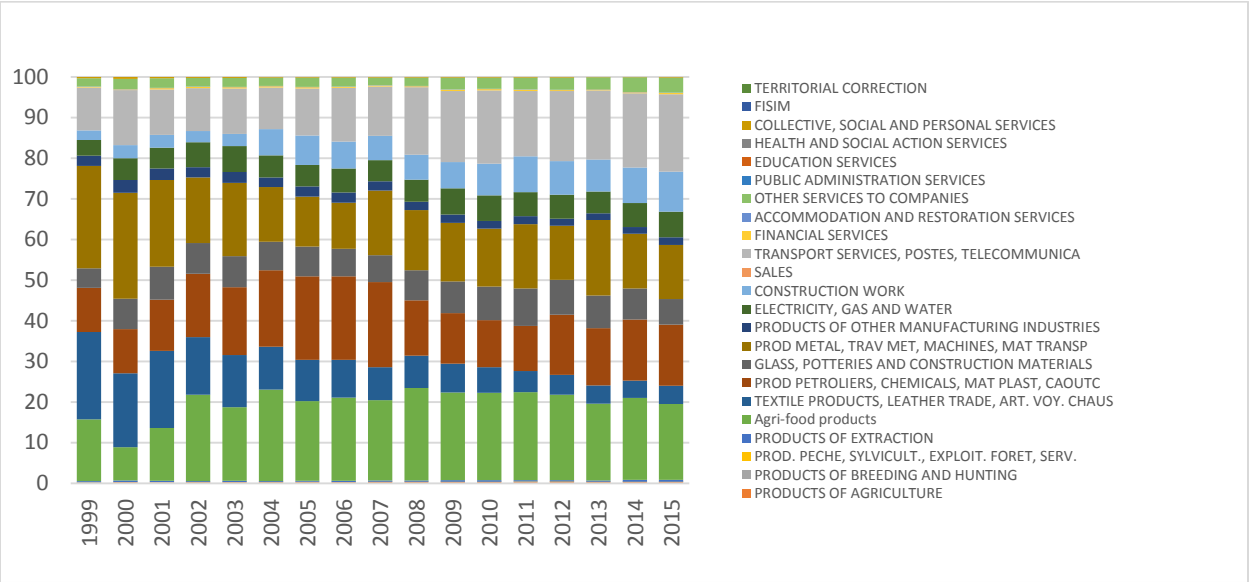
3.1.2. VAT Revenue (actual collection): by specific sectors of production

Looking at the contributions of specific sectors for actual VAT revenue collection, we notice some key/strategic sectors. In Benin, for instance, production of agro-food products; textile, leather products; petroleum products, chemical products; glass, potteries, construction materials; production of metals; electricity; construction work; and transport services - together accounted for more than 90% of VAT revenue (see Figure 10). In Burkina Faso, formal manufacturing activities, beverages and tobacco industry, petroleum related products, construction activities, modern commerce, and financial service activities - similarly account to over 90% of VAT receipts (see Figure 11).

Compared to Burkina Faso, Benin shows a slight diversification in its sources of VAT revenue. In Burkina Faso, the formal manufacturing sector accounts for by far the largest share of total VAT receipts.[28]

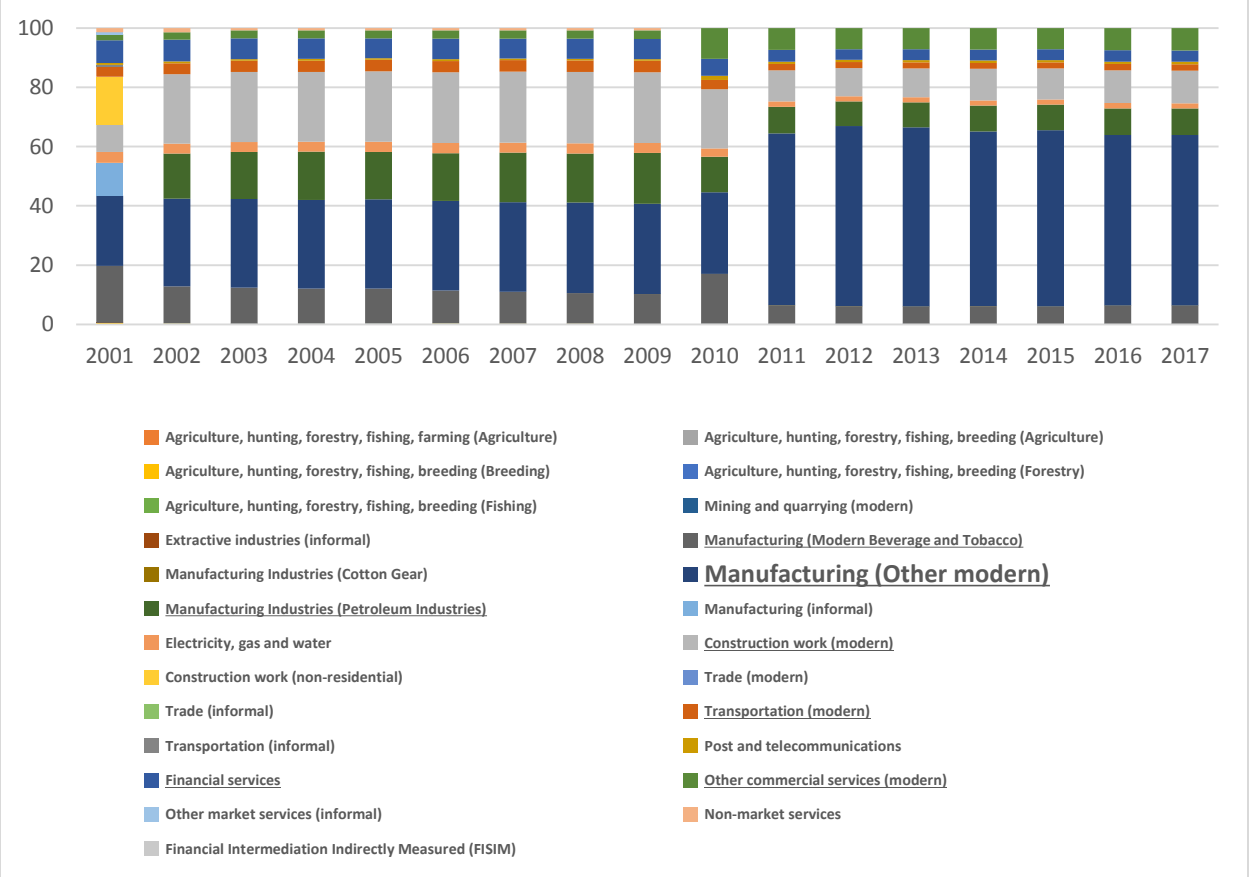
[28] For instance, VAT charges on the production process and imports of various formal 'manufacturing activities' (i.e. textile, wearing apparel and leather industries; manufacture of chemicals and chemical, petroleum, coal, rubber and plastic products; manufacture of fabricated metal products, machinery and equipment; manufacture of beverages and tobacco; other manufacturing industries) accounted for about 74% of VAT receipts in Burkina Faso in 2015. In Benin, these same sectors contributed about 41% of VAT receipts in 2015.

Figure 10: Sectoral contribution to VAT revenue in Benin (% of total)



Source: using INSAE data

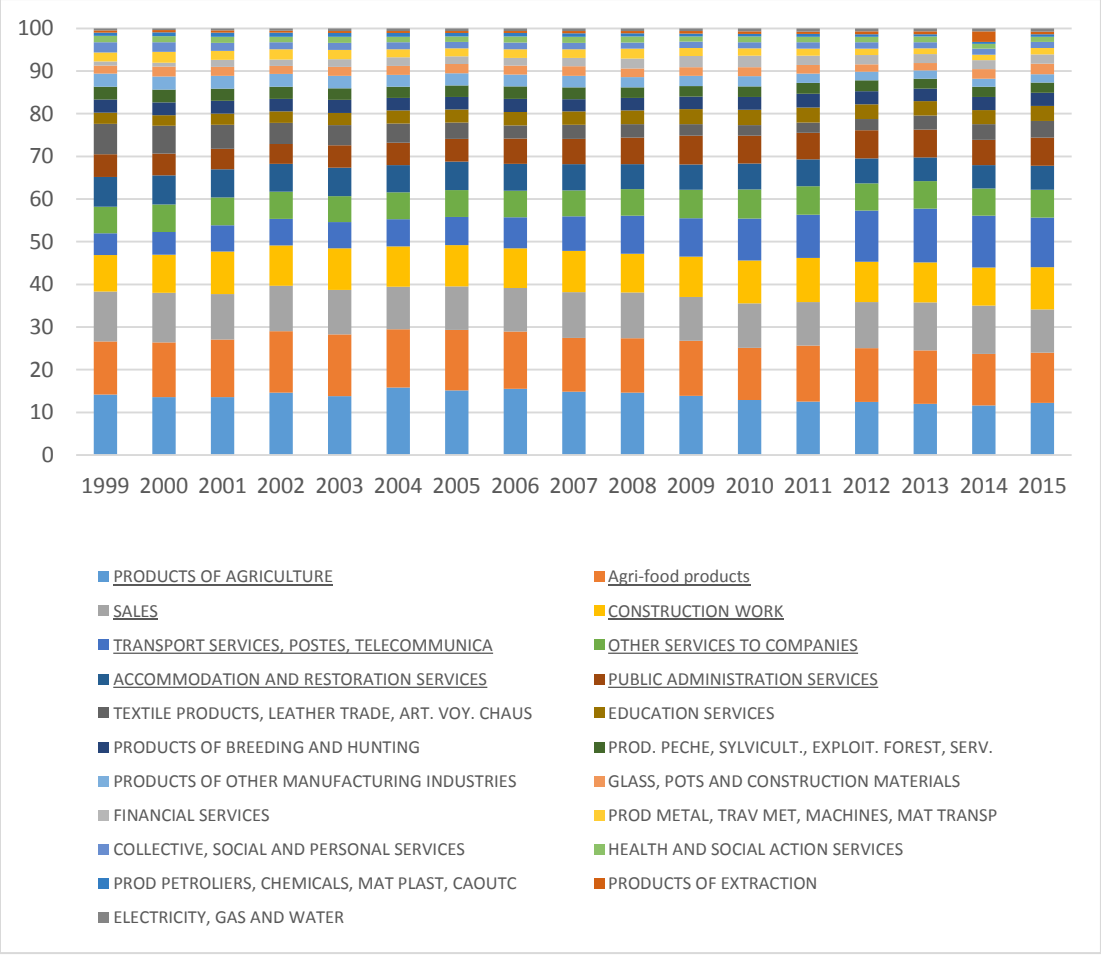
Figure 11: Sectoral contribution to VAT revenue in Burkina Faso (% of total)



Source: using INSD data

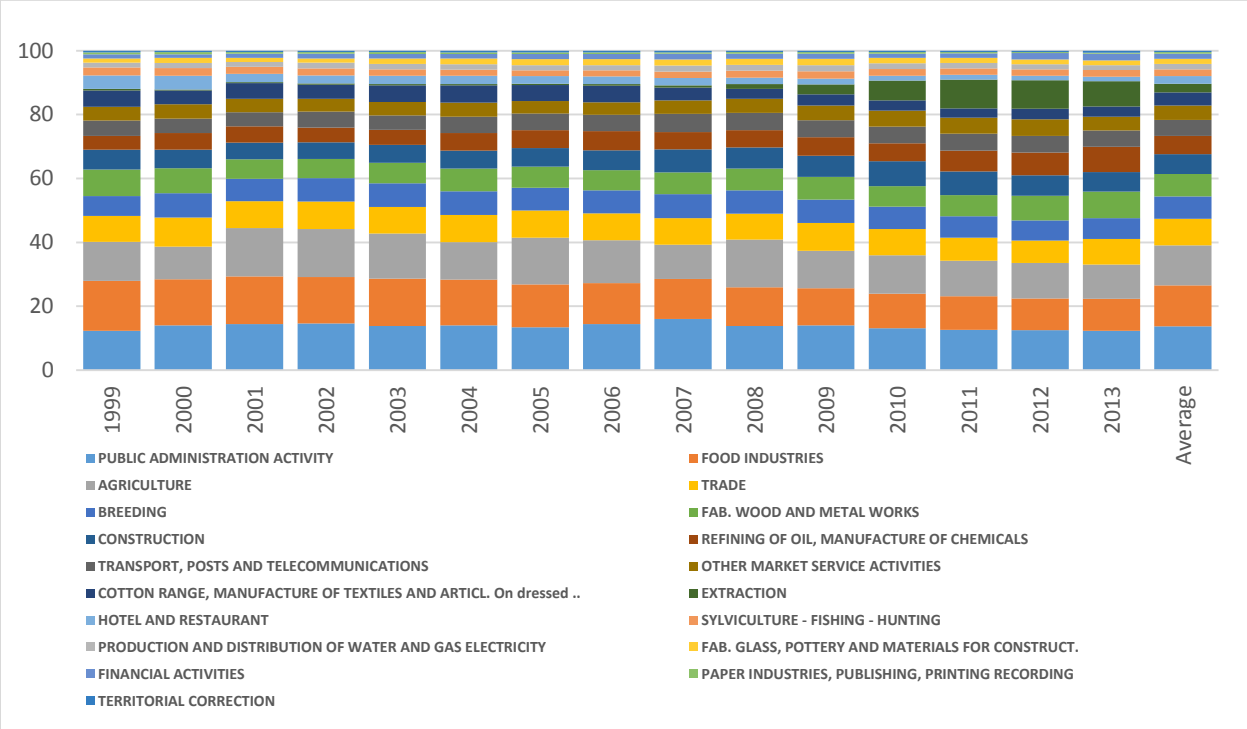
Under normal circumstances (i.e. assuming that VAT was charged in the same manner and without exception in every branches of the economy), we expect to see a scenario where the sectors contributing the biggest shares of VAT revenue collection should also be sectors with the biggest weight in the economy. In other words, those sectors involving significant levels of value addition (e.g. via the production process and imports of inputs) should be expected to contribute the largest share to actual VAT revenue collection. However, this may not always be the case in reality for a range of reasons. Some sectors have a higher rate of compliance than others. Some sectors mainly involve formal economic activities that include routine paper works, thus, making VAT evasion difficult. Others (e.g. agriculture) involve a great deal of informal transactions, making tax evasion easier and the work of tax authorities in those sectors difficult. Further, there might be deliberate policy amendments to the standard VAT rate (e.g. VAT rate differentiation) and also concessions on the list of economic activities and consumption goods/services that are eligible for VAT charge (i.e. VAT exemptions). For this reasons, sectors such as agriculture (although often constitute an outsized share of the economy) end up contributing less than expected to the actual VAT revenue.

Figure 12: Share of sectors in total output & imports for Benin



Source: using INSAE data

Figure 13: Share of sectors in total output & imports for Burkina Faso



Source: using INSD data

Going to the sectoral breakdown of the economies of Benin and Burkina Faso, we notice the following key sectors. In Benin, the main sectors constituting the economy (respectively) include; agriculture (specifically agro-food products), sales, construction work, transportation, postal and telecommunication, other market services, accommodation services and the public sector (see Figure 12).

In the case of Burkina Faso, the key sectors are respectively; public sector, agro-food products, trade, animal breeding, wood and metal works, construction, petroleum and chemical products, transportation, postal and telecommunications services, other market service activities, cotton and textiles manufacturing (see Figure 13).

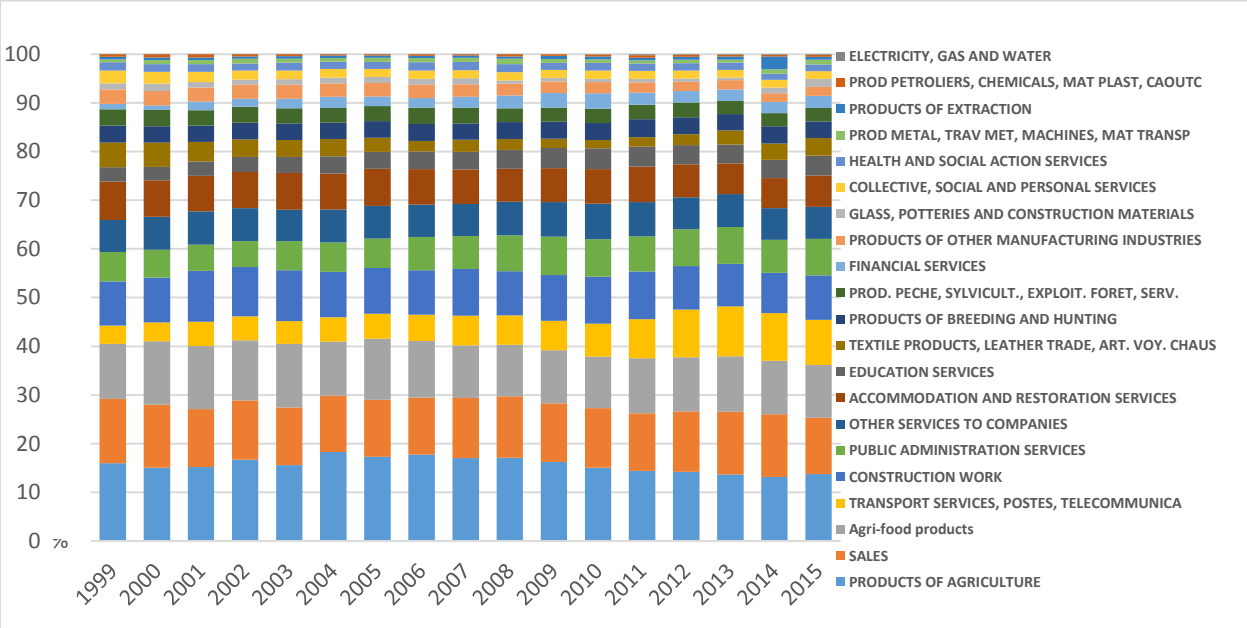
3.2. Sectoral sources of VAT Gaps in Benin and Burkina Faso

As we can see from figures 14 (for Benin) and 15 (for Burkina Faso), the sectors where the largest gaps in VAT collection is witnessed (normalized by sector's share of total production in the economy) are as follows:

- In Benin: Production of agricultural items (and food items in particular); sales; transport services; construction work; public administration; and the service sectors.
- In Burkina Faso: Public administration and various agricultural activities.

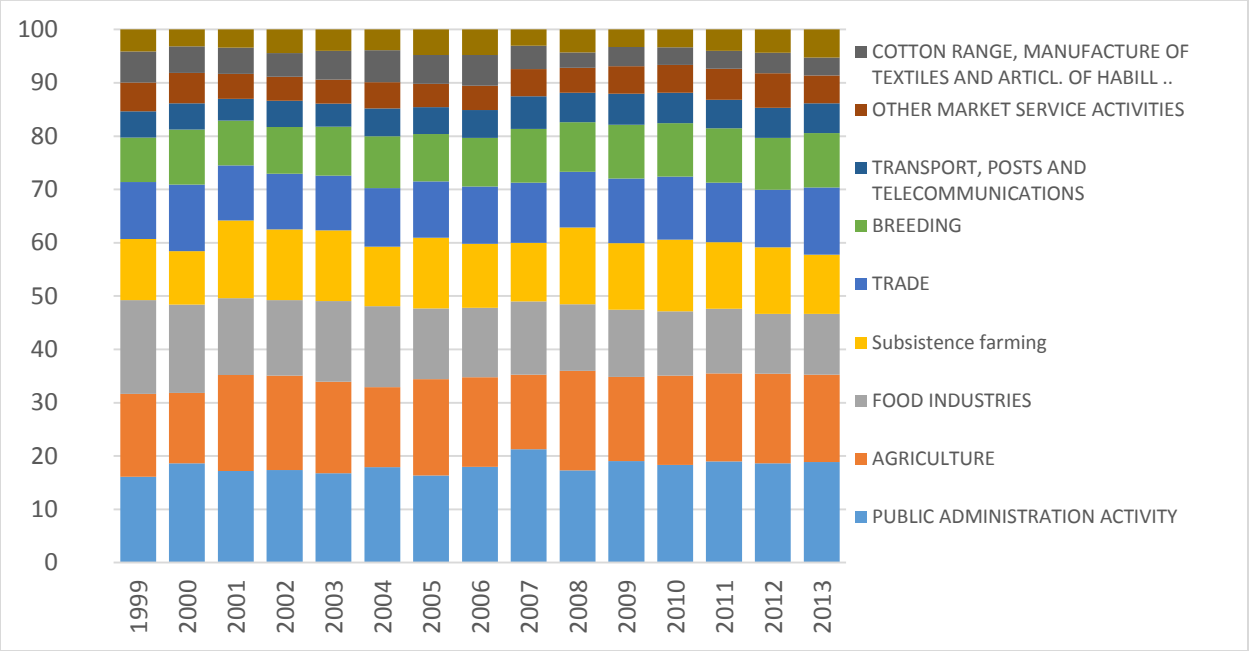
Obviously, sectors such as agriculture that have significant informal activities show significant VAT gaps. As production activities in these sectors are difficult to track by tax authorities, it also becomes difficult to enforce tax on them. Moreover, largely formal activities/sectors such as transportation, construction activities, commerce, etc. are also on the list not because they have the same scale of tax compliance/enforcement problems - rather because of their significant weight in measured (formal) economic activities. Further, public administration, i) given its considerable share of the economy - more than 15% in Benin & around 25% in Burkina Faso in recent years and ii) typical policy gaps (related to tax exemptions) represents another key source of VAT gap. For comparison, our analysis shows that VAT gaps in public administration (normalized for sectoral share) accounted for about 6% of overall VAT gap in Benin and roughly 15% in Burkina Faso.

Figure 14: Sectoral Sources of VAT gaps in Benin (Normalized by share of sectors in economy)



Source: using INSAE data

Figure 15: Sectoral Sources of VAT gaps in Burkina Faso (Normalized by share of sectors in economy)

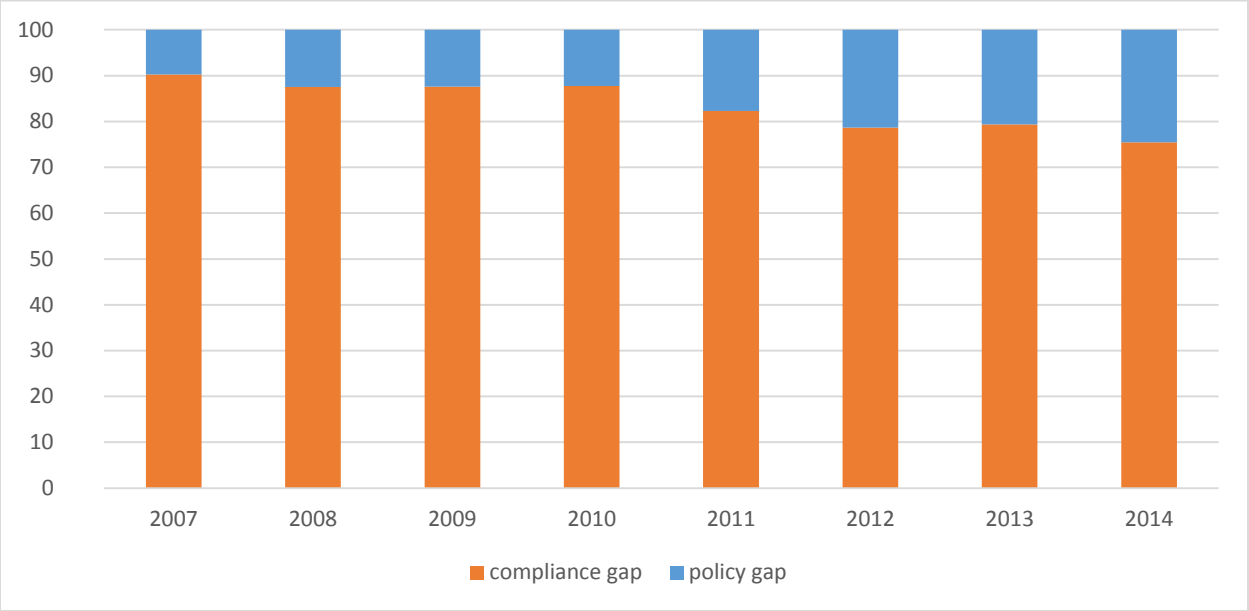


Source: using INSD data

3.3. Decomposing VAT gap: compliance gap and policy gap

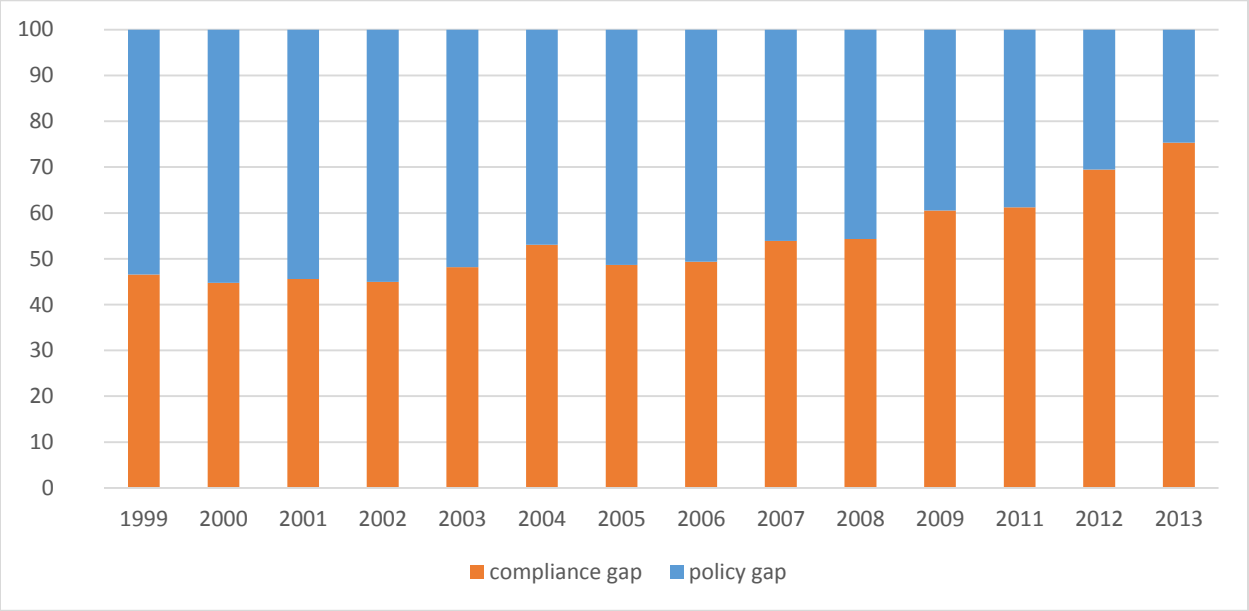
Figure 20 and 21 report the results as regards the decomposition of VAT gap in Benin and Burkina Faso, respectively. Looking at the relative importance of compliance gap and policy gap in overall VAT gap, we notice that in Benin compliance gap explains comparatively a larger portion of VAT gap. By contrast, in Burkina Faso both the compliance and policy gaps explain a sizeable portion of VAT gap. Yet, even in Burkina Faso, the contribution of policy gap to overall VAT gap displays a declining trend. This has especially been the case in the years since the late 2000s.

Figure 16: Comparing Compliance & policy gap (%) in Benin



Source: using INSAE data

Figure 17: Comparing Compliance & policy gap (%) in Burkina Faso



Source: using INSD data

3.4. Sectoral sources of the Compliance gap (%)

In the first place, there is a limited body of empirical literature on 'VAT gap' and 'VAT compliance' - largely owing to data limitations and difficulty of measuring compliance (Keen and Smith, 2007; Reckon, 2009). The exiting pool of studies on VAT gap have often followed one of two major styles. The first group of studies is quantitative in nature and conducts an econometric analysis of the VAT gap (e.g. Agha and Houghton 1996; Christie and Holzner, 2006). The main objective of these being determining country-specific characteristics that appear to decide the levels of the VAT gap observed across countries. For instance, Agha and Houghton (1996), who examine a cross–section of VAT compliance rates for 17 OECD countries, state that the longer VAT has been in operation, VAT compliance increases. This makes sense as countries' may need time to develop the capacity to efficiently implement VAT - i.e. years after their first adoption of the tax instrument. They also find that higher levels of VAT rate are associated with lower VAT compliance. This is also understandable as such a policy may tend to considerably distort market prices and competition among businesses. The authors also argue that smaller countries (i.e. those with low population) tend to achieve higher levels of compliance. This could also be explained by the fact that these countries face lower administrative burden and complexity in their revenue management - directly linked to their small size.

Christie and Holzner (2006), who examine VAT compliance in 29 European states over the 2000-03 period, argue that greater judicial and legal effectiveness boosts countries' compliance of VAT. This confirms the established positive role of good institutions in improving revenue mobilization effort of countries. Similar to Agha and Houghton (1996), they also find evidence where VAT compliance is reduce by higher (weighted average) VAT rates.

Others, especially those who study multiple countries have used a combination of the above two techniques. For instance, Reckon's (2009) econometric analysis of vat gap is conducted for 24 EU countries over the 2000-06 period. In line with the finding of Agha and Houghton (1996), Reckon (2009) shows that larger VAT gap is witnessed in countries with a larger population. The study also finds that VAT gap share tends to decrease when perception of corruption is lower among taxpayers. This again corroborates the need for improvement in quality of institutions. The study also finds lower VAT gap among countries where a large share of GDP is accounted by construction services. In a similar interesting note, Christie and Holzner (2006) find that higher levels of VAT compliance is observed in countries where travel revenues account for a large proportion of GDP. This shows that some sectors are less prone to tax non-compliance and, thus, have low VAT gap.

A 'top-down' estimates of the VAT gap by Reckon (2009) over the same period and same group of countries shows no common trend in VAT gap across EU Member States. Yet, the study reports a slight downward trend in VAT gap for most EU Member States. Particularly, the study finds a steady decline in VAT gap in Belgium, Denmark, Spain, Ireland, the Netherlands, Poland, Sweden and Slovenia. Meanwhile Greece, Hungary, and Lithuania showed a clear rise in VAT gap over the study period.

Another example of a 'top-down' estimate of VAT gap was conducted on Bolivia by Godin, Houssa and Megersa (2017). Their finding shows that Bolivia historically had high levels of VAT gap but that it has significantly cut the gap with years of improvement and reform. For instance, the country has reduced a VAT gap of over 60% at the beginning of the 1990s to just over 10% by 2012. Apart from

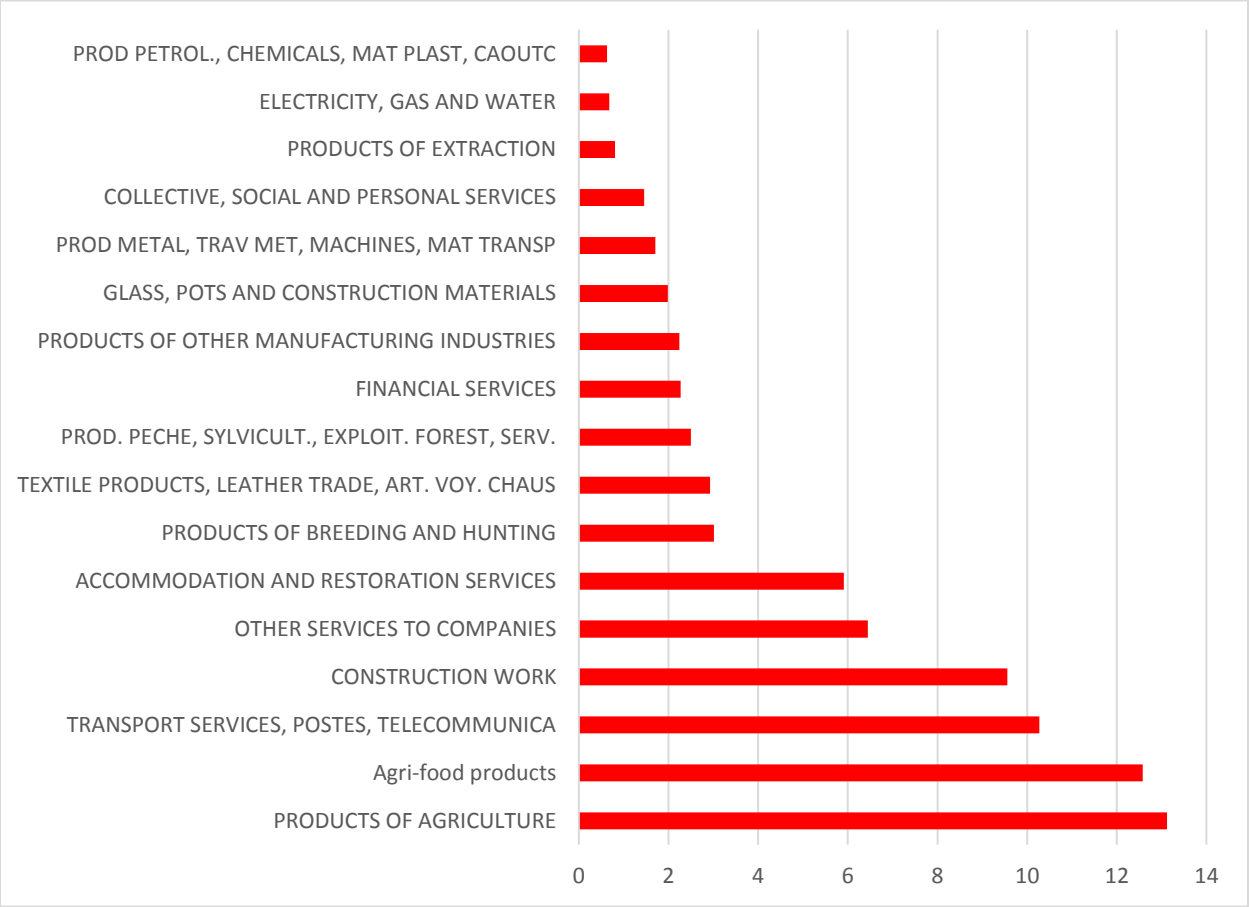
Bolivia, this study also provided a basic summary of VAT's efficiency across 17 other countries, i.e. present and past partners of the Directorate-general Development Cooperation and Humanitarian Aid (DGD) of Belgium. The findings show that VAT efficiency is low in most of these countries. More than half of the countries analyzed were able to mobilize under 50% of their potential/theoretical VAT receipts.

A recent assessment of VAT gap in Uganda by IMF staff (Hutton et al., 2014) found Uganda to have a large VAT compliance gap - about 60% of its potential. The study, which analyzes the 2003/4-2012/13 fiscal years, notes that the gap has remained more or less steady over time. The analysis utilized a VAT gap estimation methodology that is comparable to the analysis in this paper. Similar to this work, it investigates data on the VAT generated at sectoral level. Further, the technique applies a 'top-down' approach to estimate VAT gap. This involves comparing actual VAT receipts in different sectors of the economy with a theoretical tax liability computed from general economic data. For more on the 'top down' and 'bottom up' techniques of VAT gap estimations, see Reckon (2009) and Keen (2013).

The Revenue Administration Gap Analysis Program (RAP-GAP) conducted on a sectoral level by Hutton et al. (2014) shows that the Ugandan economy faces compliance gaps mainly attributed to - construction, food and beverage manufacture, and hotels and restaurants sectors. To be specific, they estimate that the VAT gap in Uganda's construction sector represented an excessive 3.3% of GDP. They note that the construction sector (which contributes the highest share of Uganda's compliance gap) is a 'high risk' sector in many other countries as well.

The other two key sectors for VAT gap identified in Uganda are 'Food, beverage, tobacco manufacturing' and 'Hotels and restaurants', where both of these sectors constitute around 1% to1.5% of GDP as VAT compliance gap, with slight variation over their study period. In all other sectors, the compliance gap was below 1% of GDP. Other notable sectors contributing to the compliance gap (using estimates for the 2012/13 fiscal year) include 'Agriculture, fishery, forestry' (0.5% of GDP), 'Electricity, gas, and water supplies' (0.5% of GDP), 'Wholesale and retail trade' (0.6% of GDP), 'Real estate activities' (0.3% of GDP), and 'Other services' (0.3% of GDP). In some other sectors, the estimates of the compliance gap shows negative figures. This means that, the actual VAT receipts of these sectors is more than the estimates of VAT potential/liability generated from available production (input-output) data. Such sectors include, 'Mining and quarrying' (-0.7% of GDP), 'Other manufacturing' (-0.7% of GDP), 'Air transport and transport support' (-0.2% of GDP), and 'health sector' (-0.2% of GDP).

Figure 18: Average compliance gap in Benin (%, weighted by share of sectors)



Source: using INSAE data

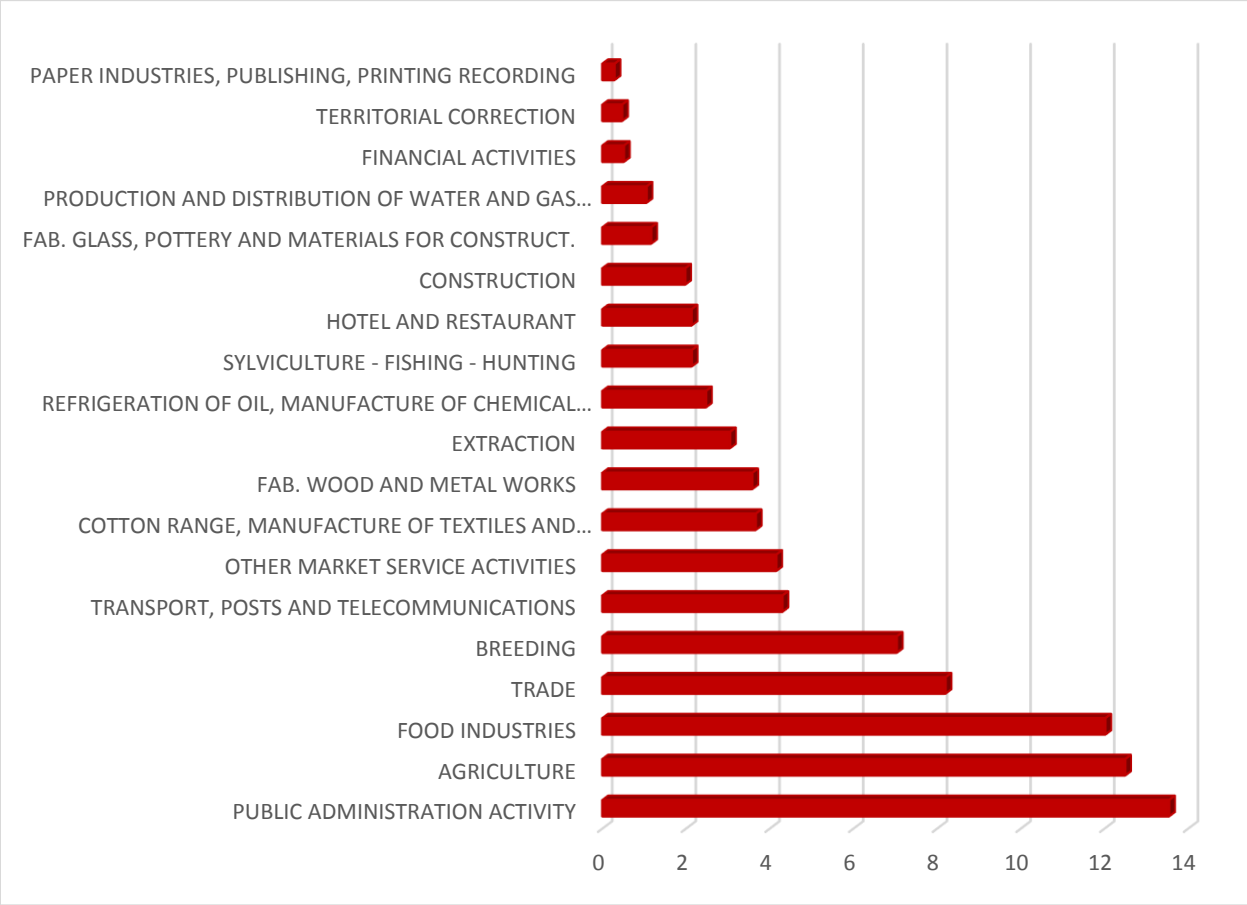
The results from our examination in to the sectors behind VAT compliance gap in our two country-specific case studies are summarized in Figure 16 and 17. These figures provide the key sectors accounting for the biggest share of compliance gap in Benin and Burkina Faso, respectively. The VAT gap for the sectors has been normalized by the share of the respective sectors in the economy. This is done to avoid sectors (especially those dominated by informal economic activities) with high absolute VAT-gap but negligible relative contribution to actual VAT collection and measured economic activity.

The analysis in Benin shows that agricultural production, i.e. production of different grains, cereals and vegetables contributes to about 13% of the VAT compliance gap. To put this in to perspective and compare it to the estimates on VAT compliance gap across sectors for Uganda done by Hutton et al. (2014), we can also convert the compliance gap given as percentage of VAT liability/potential in to a percentage of GDP. For instance, as can be seen from Figure 2, VAT revenue constituted around 6% of GDP in both Benin and Burkina Faso by 2014. Using this figure, then the VAT gap from the agricultural activities involving grain, cereal and vegetable production could be estimated to be roughly 0.78% of GDP (i.e. 13*6/100).

Next, agro-food processing industries contribute to about 12.5% of Benin's VAT compliance gap. This is followed by the transport, postal, and telecommunication services (which together represent slightly over 10% of the gap) and construction work (which also represents about 10% of the gap). Economic activities involving 'other' services to companies and accommodation and restaurant services represent about 6.5% and 6% of Benin's VAT gap respectively. Together, all these sectors account for close to 60% of the compliance gap in Benin (or roughly 3.6% of GDP).

The above breakdown of VAT gap in Benin shows that (unlike the estimates for the Ugandan economy by Hutton et al., 2014), there is no single sector playing an outsized role in VAT leakage.

Figure 19: Average compliance gap in Burkina Faso (%, weighted by share of sectors)



Source: using INSD data

The key sectors accounting for the biggest share of compliance gap in Burkina Faso are shown in Figure 17. Unlike Benin, public administration activity represents a big part of the gap, which is estimated at 13.5% of the overall gap (or roughly 0.8% GDP, assuming a VAT revenue of 6% of GDP by the country). However, as Hutton et al. (2014) and Keen (2013) note, estimating VAT gap over economic activities involving the public sector are tricky and may lead to over estimation of the

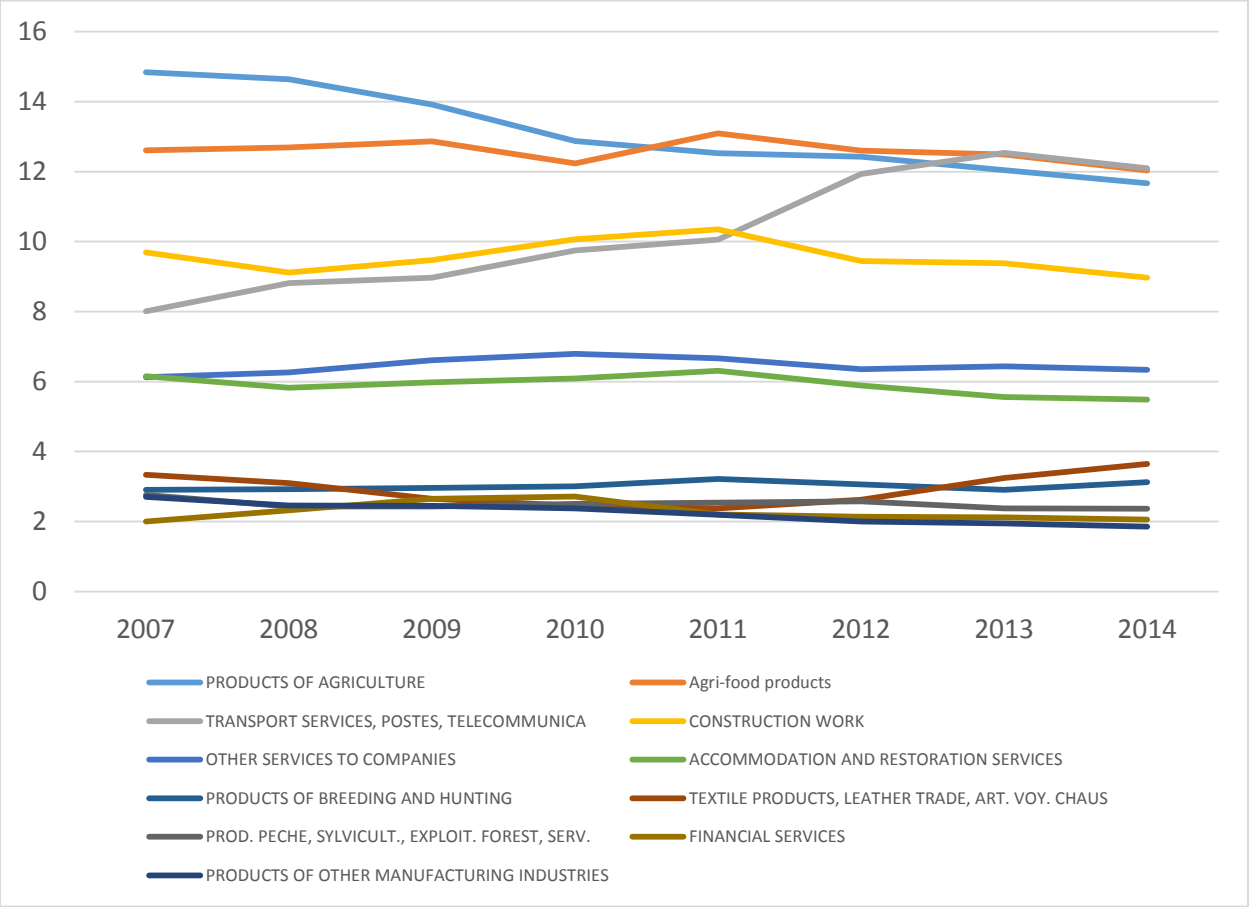
compliance gap. This is so since the macroeconomic data (e.g. production and imports) used to estimate the VAT liability may be different from the one used by tax offices to calculate actual VAT charges.

For instance, Hutton et al. (2014) confess that their VAT gap estimates for Uganda's 'construction sector' (which was about 3.3% GDP) may overestimate the gap. National accounts data used in the computation of VAT gap for the sector admittedly may not show the real picture. For instance, they mention the fact that major public sector civil engineering works (e.g. major public construction projects of roads, railways, power, public housing, etc.) may be included in the construction sector when production in the economy is aggregated for national accounts. On the other hand, data from tax departments may not include them in the normal tally of the construction sector as public sector civil engineering works may be exempted from VAT in many countries. Hutton et al. (2014) actually think that this could lead them to overestimate the VAT gap in this sector by 1.5% of GDP. They also note that such over estimations of VAT gap may not only be specific to the construction sector but may apply to the VAT gap estimates of the whole economy. The study on VAT gap on EU Member States by Reckon (2009) also gives a warning that estimates of VAT gap is only as good as the national accounts data used to compute it. Further, they also mention that it may not include other taxable items that may not be part of the national accounts computation.

Similar to Benin and also Uganda, farm activities in the 'agriculture' sector take the next prominent spot of the compliance gap. The sector constitutes about 12.5% of the compliance gap (or about 0.75% of GDP). This is comparable to Benin (0.78% GDP) and Uganda (0.5% GDP). Next comes the 'food industry' (i.e. agro processing) representing 12% of the compliance gap (roughly 0.72% of GDP). This compares to a compliance gap of about 0.75% and 1.1% of GDP for Benin and Uganda, respectively.

Other notable sectors each comprising the VAT compliance gap in Burkina Faso include, 'trade/commerce' (about 8% of the gap), animal 'breeding' (about 7% of the gap), 'transport, posts and telecommunications' (about 4% of the gap), and 'other market service activities' (about 4% of the compliance gap). Again, these sectors together represent about 60% of the compliance gap in Burkina Faso (or roughly 3.6% of GDP).

Figure 20: Dynamics of compliance gap in Benin (%, Key sectors, compliance gap weighted by share of sectors)

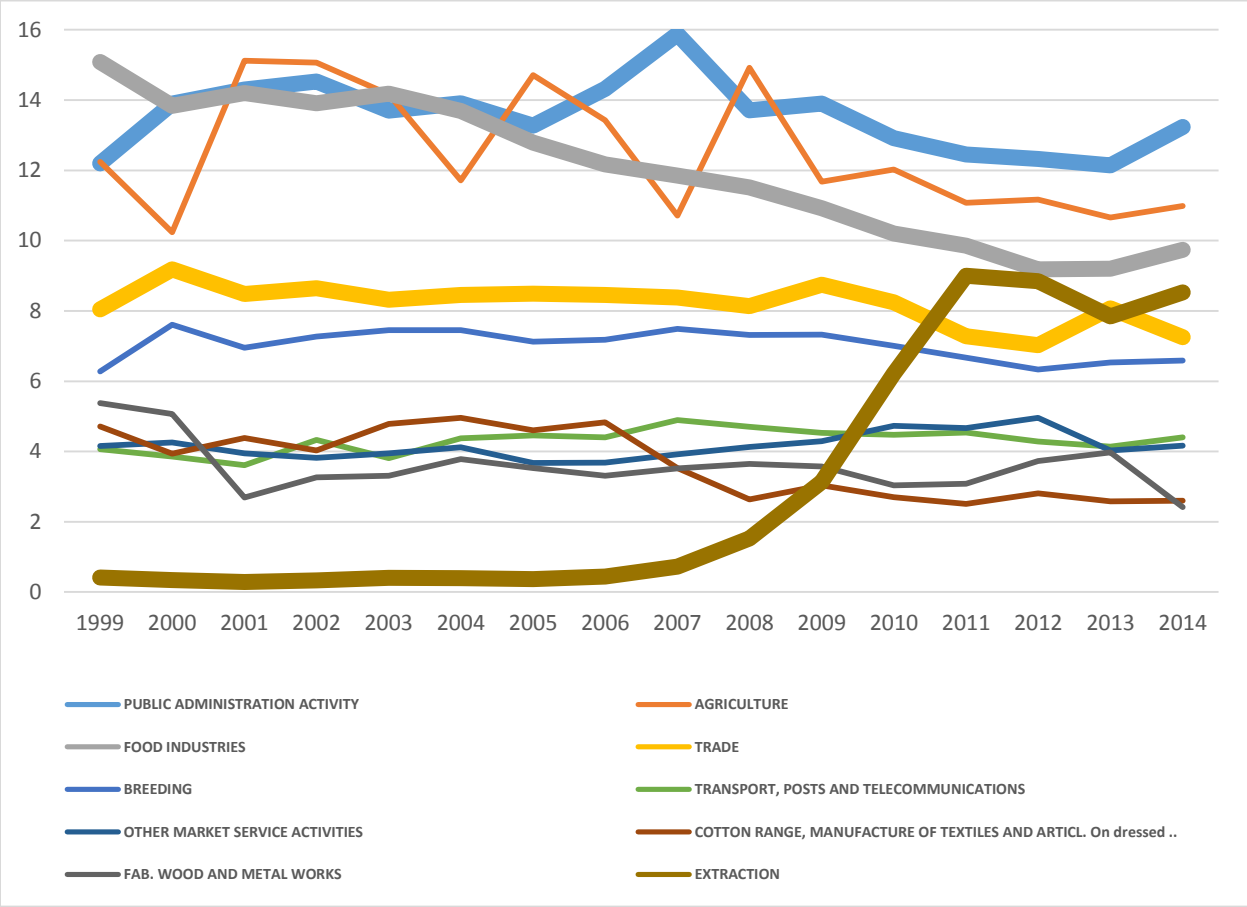


Source: using INSAE data

Looking at the dynamics of compliance gap in Benin, we notice that there has not been a considerable change over recent years. Key sectors such as agricultural production, agro-food processing industries as well as transport, post, and telecommunication services continued to be the ones responsible for a bigger share of the compliance gap over the 2007-2014 period. However, the contribution of sectors such as agriculture to overall compliance gap has marginally decreased in recent years, while that of transport, post, and telecommunication services has marginally increased.

Yet, it is important to stress that this dynamics in share of VAT compliance follows both the pure trend in VAT compliance as well as the changes in the structure of the economy - where sectors such as agriculture go on to see smaller share of the economy, unlike telecommunication and other formal services.

Figure 21: Dynamics of compliance gap in Burkina Faso (weighted by share of sectors)



Source: using INSD data

The dynamics of VAT compliance gap across major sectoral branches in Burkina Faso has also shows some consistency over the period shown in the figure above. However, key sectors such as public administration, agriculture and food industries have seen slight decline in their contribution to overall VAT compliance gap. Conversely, extractive activities have seen rising share of VAT compliance in recent years, particularly since the second half of the 2000s.

4 | Concluding remarks and discussions

Since its introduction in the early 1990s, VAT has come to constitute a sizeable share of tax revenue (about 40% of total tax earnings in recent years) in both Benin and Burkina Faso. Successive reforms on VAT and other tax policies as well as broad institutional reforms (especially at the early years following the introduction of VAT) have been responsible for the gains in total tax revenue as well as VAT (see section 3). The VAT gap (i.e. the discrepancy between potential/expected VAT revenue

and actual VAT receipts) has been declining overtime. The decline in VAT gap follows the gains in efficiency of the VAT system in both countries.

VAT revenue may change following changes in consumption (often due to dynamics in economic growth), changes in VAT rates and changes in VAT's efficiency. However, of these three factors, what mainly explains the historical changes in VAT revenue in both countries has been changes in VAT's efficiency (also known as C-efficiency). Even if Benin historically had a slight lead in VAT efficiency (as being one of the pioneers in tax reform in the region), Burkina Faso has caught up in recent years - especially since the late 2000s. Yet, overall VAT gap remains high (in excess of 50%) in both countries, a level that is also high by the standards of some developing countries (see Section 4).[29] Therefore, tax revenue generated from VAT still has room for further expansion in the two countries - if the gaps in the system are better addressed. This is vital, considering the low level of overall tax revenue in these countries, where both of them have historically failed to hit WAEMU's tax revenue target of 17% of GDP (see Figure 3 and 4).

Looking at a broad spectrum of each economy; i.e. comparing consumption by households, consumption by the public sector as well as fixed capital formation, we find that household consumption constitutes a little over 70% of VAT liability (theoretical VAT potential) in Benin while in Burkina Faso, it represents a little over 60% of VAT liability in recent years. The slight gap between the two countries is partially explained by the fact that consumption by the public sector represents a bigger source of VAT potential (over 20%) in Burkina Faso in recent years (see Figure 8 and 9). However, public sector consumption often tends to be exempted from VAT - constituting one key area of VAT gap.

Focusing on the specific sectors that are responsible for actual VAT collection, we see a comparable picture in both Benin and Burkina Faso. For instance, in both countries, light manufacturing and formal services (e.g. textile and leather products; petroleum products, construction materials; electricity; construction; transport, etc.) constitute the largest share of VAT revenue. Agricultural and informal service activities (although may constitute a significant chunk of the economy) are difficult to tax and, hence, do not contribute their fair share to VAT. Apart from the conventional tax reform policies directed (mainly) at the formal economy, the additional challenge for Benin and Burkina Faso is to 'modernize' their informal sector. Overall, Benin has a relatively diversified source of VAT revenue, as compared to Burkina Faso. Although both economies have comparable economic structure, Benin appears to have done a better job of extending VAT to traditionally informal economic activities. For instance, the agricultural sector (at least formal agriculture or agro-processing) is generating a considerable share of VAT revenue in Benin.

Despite their similarities in their economic structure, the two economies also have their fair share of differences. One such notable area of difference is in their degree of reliance on trade and taxes associated with trade. As a landlocked country, Burkina Faso mainly relies on domestic economic activity and regional trade, to some extent. Benin, by contrast, is a relatively better trading nation - where its coastal 'economic capital' (Cotonou) hosts about two thirds of the country's industries and also serves as a center for the nation's major financial and non-financial businesses. Further, the port

[29] For technical details on the estimation of VAT gap see Annex 1.

of Cotonou (one of the largest in the West African region) serves a booming trade (partly illicit) with its neighboring Nigeria, i.e. the continent's largest economy. Apart from the export of products from its domestic economy, the country thrives from the import then re-export of commodities to the region (especially Nigeria). This makes the country still heavily reliant on trade as a source of tax revenue, while many other developing countries saw a sharp decline following their switch from trade taxes (tariff and non-tariff) to consumption and goods and services taxes (such as VAT). Even if its vibrant trade may serve as a comparative advantage in the short term, it also creates vulnerabilities to Benin in the long term due to trade shocks. As such, tax policy reforms should address this issue in Benin.

The analysis on the sectors with the largest contribution of VAT gap (weighted by the size of sectors in the economy) shows that in Benin; production of agricultural items (food items in particular); sales activities; transportation; construction work; public administration; and the 'service sector' are responsible for the greatest share of VAT revenue gap. Similarly, in Burkina Faso, public administration and various agricultural activities constitute the main share of the gap. Various agricultural activities are (understandably) one of the key areas where the level of VAT gap is high, since these sectors harbor a greater level of informality. On the other hand, some 'formal' economic activities linked to light manufacturing and different 'service sectors' (which have better tax compliance rates) are also listed as key areas of VAT gap. This is because their overall weight in measured economic activity is significant (see Section 3.2). Furthermore, comparing 'compliance gap' (i.e. VAT gap due to businesses and services not paying VAT) and 'policy gap' (VAT gap due to problems in VAT policy design, i.e. rate differentiation and exemption); we notice that in Benin (unlike Burkina Faso) compliance gap has historically played a much larger role than policy gap. That is, the VAT policy design in Burkina Faso (mainly featuring exemptions for certain goods and services) results in a bigger potential VAT revenue loss as compared to Benin (see Section 3.3).

To conclude, 'Domestic Resource Mobilization' (DRM) efforts in Benin and Burkina Faso could benefit from further enhancing their 'tax administrative' capacities in a way that specifically targets key sectors that display more revenue gaps. This will require a smooth collaboration and coordination between different entities of the public administration: tax authorities, statistical offices, and custom unions. In the same way, it would be necessary to reform the overall VAT tax policy with the primary objective to address the issues related to exemption or zeros rates. Further research would also be useful to understand the general equilibrium effects of alternative tax policies as well the role of key domestic institutions (e.g. government effectiveness in providing public goods to citizens, people's trust in the government, culture and regulatory issues etc.) on both demand and supply-side factors inherent to the performance of VAT. The donor community can support their partner countries in contributing to the enactment of these studies as well as in the implementation of reforms that improve the quality of institutions, since these determines success in tax collection.[30]

[30] In recent years, some donors (e.g. The Netherlands and possibly also Belgium) are also envisioning to start paying taxes on their foreign aid ventures in partner countries in the developing world.

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Annex

Annex 1: Decomposition of VAT gap

Decomposition of VAT Revenue

First, let us begin by denoting revenues from a VAT system as a ratio of GDP;

$$\frac{V_{it}}{GDP_{it}} \tag{1}$$

where,
V_{it} represents the dollar value of VAT revenues of country 'i' at year 't',
GDP_{it} represents the dollar value of Gross Domestic Product of country 'i' at year 't'.

As Keen (2013) notes, this ratio of VAT-to-GDP may be decomposed in to a product of three entities, namely; the standard VAT rate, C-efficiency and the ratio of final consumption to GDP.[31] That is;

$$\frac{V_{it}}{GDP_{it}} = \tau_{s_{it}} \cdot {E_{it}}^{C} \cdot \frac{C_{it}}{GDP_{it}} \tag{2}$$

where,
$\tau_{s_{it}}$ represents the standard VAT rate of country 'i' at year 't',
${E_{it}}^{C}$ represents the C-efficiency of country 'i' at year 't' and,
$\frac{C_{it}}{GDP_{it}}$ represents the ratio of final consumption to GDP for country 'i' at year 't'.

Conversely, by rearranging the relationship described in equation (2), we may also rewrite C-efficiency as follows;[32]

$${E_{it}}^{C} = \frac{V_{it}}{\tau_{s_{it}} \cdot C_{it}} \tag{3}$$

The C-efficiency is, therefore, a ratio between the amount of VAT actually raised to that of the VAT amount which would have been raised in the 'ideal scenario' where VAT is perfectly enforced by the country, and if the VAT was levied at a uniform standard rate (τ_s) on all consumption.[33]

Specifying the VAT revenue to GDP ratio (see equation 2) as a product of these three components (i.e. the standard VAT rate, C-efficiency, and consumption's share of GDP) enables us to study the

[31] The final consumption (C) used here represents the consumption valued at VAT exclusive prices.
[32] C-efficiency (and the relationship implied in equation 3) is vital to this paper since it could be used to compare the efficiency of VAT across countries and also across time periods.
[33] The enforcement of VAT at a uniform rate across the economy assumes an 'ideal scenario' where there would be no exemptions or VAT rate deductions for various classes of products or economic agents. Therefore, C-efficiency serves more like a rough guide to VAT's efficiency. In general, developing countries (with their 'relatively' bigger informal sectors, tax loopholes, weak institutions and enforcement capacities) score lower on C-efficiency when compared to wealthier countries.

dynamics of the VAT ratio, as the changes emanate from the three specific components. That is, we would be able to tell what is contributing more to - say - a growth in VAT revenue. It could be that a country is able to get more VAT revenue from

1) raising the standard VAT rate,
2) boosting the C-efficiency of its VAT system,
3) due to higher economic, thus, consumption growth
4) any combination of these factors

In realistic scenarios, the movement in VAT revenues (increase or decrease) emanates from case 4 above, i.e. a combination of changes ranging from C-efficiency, changes in VAT rate to consumption growth. What is even more important, the factors might even have offsetting effects up on each other. For instance, a slower economic growth and aggregate consumption (thus lower VAT revenues) might be counterbalanced by a simultaneous rise in C-efficiency. Further, a rise in the standard VAT rate with the intention of increasing VAT revenue might backfire and result in even smaller VAT revenue by indirectly forcing economic agents underground in to the informal economy (Loayza, 1996; Keen, 2008; Paz, 2015). So, such a decomposition of changes in VAT revenue to these three major subcomponents would be very helpful to the tax authorities. They could monitor the state of the revenue collection process in detail (and the state of the economy at large) to undertake sensible policies and better prepare beforehand by monitoring movements in the individual VAT components.

If we represent the changes in VAT revenue to GDP ratio as $\left(\frac{\widehat{V_{it}}}{GDP_{it}}\right)$, we may denote the decomposed changes in the subcomponents as;

$$\frac{\widehat{V_{it}}}{GDP_{it}} = \widehat{\tau_{s_{it}}} + \widehat{E_{it}^{C}} + \left(\frac{\widehat{C_{it}}}{GDP_{it}}\right) \qquad (4)$$

Equation (4) tells us that, the changes in the VAT revenue (as share of GDP) can be explained by the corresponding summation of changes in the three components specified in the right hand side of equation (4).[34]

Expanding the specification of C-efficiency

Ease of computation, minimal data requirement and possibility to compare multiple countries make C-efficiency an appealing measure for VAT's efficiency. However, this measure is not good at capturing some of the gaps within the VAT system. For instance, its solid assumption of 'perfect enforcement of the standard VAT rate' makes it detached from reality, as countries often have wide ranging exemptions and rate differentiations in their legal tax codes. Further, there are various social goals that legitimize these exemptions and rate differentiations. This relates to the redistributive role of tax (e.g. items consumed more by the poor should be taxed less) and the punitive or supportive role with regard to certain consumption items (e.g. discouraging alcoholic drinks and cigarettes vs.

[34] Keen (2013) notes that C-efficiency, standard VAT rate and consumption's share of GDP might not be exogenous, and in fact there might be interdependence in real setting. For instance, there might be a decline in C-efficiency following a rise in standard VAT rate. As widely suggested in the literature (Keen, 2008; Keen, 2013; Paz, 2015), this happens as VAT noncompliance rises following a rate rise. Further, a rise in VAT rate (via increases in final consumer prices) might lead to lower consumption levels and thus lower the VAT revenue (Alm and El-Ganainy, 2013).

encouraging exports). Due to such complexities of actual tax codes, we need to introduce alternative measures (mechanics) that better capture VAT inefficiency and gaps.

In order to incorporate exemptions and the different actual rates charged on various classes of consumption items, we may specify the VAT revenue (which was henceforth implicitly assumed to be the product of the standard rate with final consumption, i.e. $\tau_{s_{it}}\ C_{it}$)[35] as follows;

$$V_{it} = \sum_{k=1}^{N} T^*_{k_{it}} C^*_{k_{it}} \qquad (5)$$

Where,

V_{it} represents the VAT revenue received by country 'i' at year 't',[36]

$T^*_{k_{it}}$ represents the 'effective' VAT rate charged on commodity (*k*) by country 'i' at year 't',[37]

$C^*_{k_{it}}$ represents the consumption of commodity (*k*) that is being taxed by country 'i' at year 't'.[38]

Further, if we assume that aggregate consumption is composed of not only household consumption items (k=1,...,N) but also public consumption. Then we may denote aggregate consumption as;

$$C_{it} = \sum_{k=1}^{N+1} C_{k_{it}} \qquad (6)$$

Here, N+1 signifies the addition of government consumption in to the (k=1,...,N) list of household consumption. Augmenting the simplistic C-efficiency equation (3) with realistic and detailed computations of VAT revenue (equation 5) and aggregate consumption (equation 6), we get;

$$E_{it}{}^{C} = \frac{\sum_{k=1}^{N} T^*_{k_{it}} C^*_{k_{it}}}{\tau_{s_{it}} \left(\sum_{k=1}^{N+1} C_{k_{it}}\right)} \qquad (7)$$

Decomposing C-efficiency

In most circumstances, countries will not be able to achieve a C-efficiency of 100%. That is, countries will naturally display a certain level of C-efficiency gap in usual conditions. This gap could be explained by two basic reasons.

a) The first major reason ('policy gap'): emanates from the fact that VAT is rarely implemented on a uniform rate on all consumption. As we noted above, there are various exemptions and

[35] This can be implicitly inferred from the denominator of equation (3) above.

[36] This notation is the numerator of the right hand side equation given in equation (3).

[37] The effective VAT rate (i.e. $T^*_{k_{it}}$) represents the VAT rates applied by country 'i' at time 't' and at various stages of the production process, before the process culminates in the finally consumed product (k). such calculations require the input-output tables of countries and various consumption categories. As Ebrill et al. (2001) and keen (2013) note, the statutory VAT rate (i.e. $T_{k_{it}}$) is to be distinguished from the effective VAT rate as long as there are certain exemptions at any given stage in the production process. However, if there are no exemptions thought the production chain of commodity (k), then statutory and effective VAT rates can be equal and interchangeable (i.e. $T_{k_{it}} = T^*_{k_{it}}$).

[38] $C^*_{k_{it}}$ may be equated to true consumption (i.e. $C_{k_{it}}$) if zero rates were charged on final sale and the provision of subsidized private goods was left aside. However, due to non-compliance, the taxed consumption is in real scenarios often smaller than true consumption (i. e. $C^*_{k_{it}} < C_{k_{it}}$).

deductions in the legal tax codes of many countries. Keen (2013) refers to this as the 'policy gap'. It represents the deliberate policy amendments made (by the government or tax authorities) to the standard VAT rate applied to various classes of taxable items. This policy gap will assume a value of zero in the 'ideal world' where the VAT is applied to all consumption at a single uniform rate ($\tau_{s_{it}}$). Using our foregoing notations, we can capture the 'policy gap' as follows. First, if we re-specify the expanded C-efficiency equation in (7) above as;

$$E_{it}{}^{C} = \left(\frac{\sum_{k=1}^{N} T^{*}{}_{k_{it}} C_{k_{it}}}{\tau_{s_{it}} \left(\sum_{k=1}^{N+1} C_{k_{it}}\right)}\right)\left(\frac{\sum_{k=1}^{N} T^{*}{}_{k_{it}} C^{*}{}_{k_{it}}}{\sum_{k=1}^{N+1} T^{*}{}_{k_{it}} C_{k_{it}}}\right) \quad (8)$$

If we simplify the two major right hand side products of equation (8) as;

$$E_{it}{}^{C} = (1 - P)(1 - \Gamma) \quad (9)$$

On this basis, we could specify (P) to represent the policy gap as;

$$P = 1 - \left(\frac{\sum_{k=1}^{N} T^{*}{}_{k_{it}} C_{k_{it}}}{\tau_{s_{it}} \left(\sum_{k=1}^{N+1} C_{k_{it}}\right)}\right) \quad (10)$$

Equation (10), i.e. the 'policy gap', shows by how much the 'effective' VAT rate ($T^{*}{}_{k_{it}}$) charged on *(k)* commodities deviates from the standard VAT rate ($\tau_{s_{it}}$).

b) The second major reason ('compliance gap'): emanates from the imperfections in the implementation of the existing VAT system. As the name implies, this gap captures the amount of VAT liabilities that were not collected due to tax non-compliance. It basically captures what is left of the uncollected VAT liabilities that cannot be explained by the 'policy gap'. This gap will be zero if the VAT is perfectly implemented and there is no case of non-compliance. Using similar notations as above (especially equations 8 & 9),we may denote the 'compliance gap' as;

$$\Gamma = 1 - \left(\frac{\sum_{k=1}^{N} T^{*}{}_{k_{it}} C^{*}{}_{k_{it}}}{\sum_{k=1}^{N+1} T^{*}{}_{k_{it}} C_{k_{it}}}\right) \quad (11)$$

The 'policy' and 'compliance' gaps serve as good indicators of the inefficiency of VAT systems around the world (Borselli et al., 2012; De Mooij and Keen, 2012; Keen, 2013; Hutton et al., 2014). The other (practical) aspect of these two VAT inefficiency measures is the fact that they can be determined with 'relative' ease. Given the simplicity of C-efficiency calculation, if one is already able to determine the 'policy gap', then he or she will be able to also determine the 'compliance gap' as a residual of the former indicator.[39] This comes especially handy for our analysis of the VAT gap and inefficiency in developing countries where it is rather hard to determine or estimate the extent of the 'compliance

[39] In line with our decomposition of the VAT gap in to 'policy' and 'compliance' gaps in such a way, we should also note some of the underlying assumptions involved in their calculations. Specifically, the calculation of the 'policy gap' assumes that there is perfect compliance (i.e. zero 'compliance gap'). That is, (P) in equation (10) is computed using true consumption ($C_{k_{it}}$) and not the consumption which is actually taxed ($C^{*}{}_{k_{it}}$). On the other hand, the 'policy gap' (i.e. Γ) is calculated without making any of such assumptions. That is, no requirement or assumption for zero 'policy gap'. For this reason, the 'compliance gap' is actually computed using the effective VAT rate ($T^{*}{}_{k_{it}}$) and not the standard VAT rate ($\tau_{s_{it}}$). Keen (2013) notes that this is the most practical way (although theoretically there are perhaps other alternatives) of computing these VAT inefficiency indicators.

gap'. If we are able to determine the C-efficiency from national accounts data and then determine the 'policy gap' using country input-output tables (we need the latter to precisely determine the VAT liability or collectible by kicking out legal exemptions, deductions and rate differentiations), then we could compute the 'compliance gap' rather easily.

The policy gap

As noted earlier, the 'policy gap' (p in equation 10) is calculated assuming perfect compliance. Although, this is far from reality and the 'compliance gap' (often calculated as a residual of the 'policy gap') is usually non-zero.[40] Our interest here is, however, to show that we can further decompose the 'policy gap' in to various aspects of VAT imperfection that are rooted in its design (thus 'policy gap') rather than in its implementation (i.e. 'compliance gap'). Specifically, we may rewrite equation (10) to better capture other distinct gaps within the 'policy gap'. Using similar notations as before;

$$1 - P = \left(\frac{\sum_{k=1}^{N} T_{k_{it}} C_{k_{it}}}{\tau_{s_{it}} \left(\sum_{k=1}^{N} C_{k_{it}}\right)}\right)\left(\frac{\sum_{k=1}^{N} C_{k_{it}}}{\sum_{k=1}^{N+1} C_{k_{it}}}\right)\left(\frac{\sum_{k=1}^{N} T^{*}{}_{k_{it}} C_{k_{it}}}{\sum_{k=1}^{N} C_{k_{it}}}\right) \quad (12)$$

Next, we may simplify the above right hand side terms as;

$$1 - P = (1 - r)(1 - x) \quad (13)$$

In this setting, we will be able to capture discrepancy in statutory VAT rates (i.e. the 'rate gap') as;

$$r = \frac{\sum_{k=1}^{N}\left(\tau_{s_{it}} - T_{k_{it}}\right) C_{k_{it}}}{\tau_{s_{it}} \left(\sum_{k=1}^{N} C_{k_{it}}\right)} \quad (14)$$

This reflects the VAT gap that arise from the differentiation between the standard VAT rate and the effective VAT rate charged on various ($C_{k_{it}}, k = 1, \ldots, N$) commodities.

Conversely, once we have the 'policy gap' and the 'rate gap', we may capture the 'exemption gap' as a residual from equation (13) as follows;

$$x = 1 - \left(\frac{1-P}{1-r}\right) \quad (15)$$

This reflects the VAT gap which arise due to exemptions. In such a setting (which is done for practical reasons), the rate differentiation is first calculated and the 'exemption gap' is calculated with the 'rate differentiation' being operational.[41]

[40] In sections 3.3, we show the decomposition of VAT gap in to compliance and policy gap for Benin and Burkina Faso.
[41] Again, theoretically it is possible to do this the other way around. That is, first calculating the 'exemption gap' and then the 'rate differentiation' later on derived as a residual from the 'policy gap' and the 'exemption gap'. However, it is much easier to practically proceed the way we stated above (see Keen, 2013 for more on further decomposition of the 'exemption gap').

Annex 2: Data on Benin

Table 2: VAT revenue by major sectoral branches

	TVA non déductible (mill. CFA)	2007	2008	2009	2010	2011	2012	2013	2014	2015
10	PRODUITS DE L'AGRICULTURE	710	762	802	922	983	1,095	1,114	1,153	1,076
20	PRODUITS DE L'ELEVAGE ET DE LA CHASSE	4	4	4	4	4	4	4	4	4
30	PROD. PECHE, SYLVICULT., EXPLOIT. FORET,SERV.	5	5	5	5	5	5	5	5	5
40	PRODUITS DE L'EXTRACTION	577	720	891	877	849	948	951	1,424	1,419
50	Produits des industries agroalimentaires	38,272	49,322	49,493	52,781	51,096	54,744	56,590	59,103	53,345
60	PRODUITS TEXTILES, TRAV.CUIR, ART. VOY. CHAUS	15,637	17,276	16,286	15,526	12,192	12,773	13,531	12,648	12,998
70	PROD PETROLIERS, CHIMIQUES, MAT PLAST, CAOUTC	40,561	29,537	28,334	28,272	26,287	38,594	42,278	44,218	43,005
80	VERRE, POTERIES ET MATERIAUX DE CONSTRUCTION	12,714	16,154	17,937	20,360	21,702	22,321	24,000	22,328	18,055
90	PROD METAL,TRAV MET,MACHINES, MAT TRANSP	30,826	32,044	33,043	35,016	37,407	34,676	55,734	39,617	38,161
100	PRODUITS DES AUTRES INDUSTRIES MANUFACTURIERE	4,364	4,395	4,588	4,604	4,622	4,633	5,071	4,954	5,394
110	ELECTRICITE, GAZ ET EAU	10,061	11,791	14,788	15,465	13,776	15,452	15,869	17,318	18,005
120	TRAVAUX DE CONSTRUCTION	11,468	13,400	14,792	19,130	20,911	21,395	23,639	25,739	28,127
130	VENTES									
140	SERVICES DE TRANSPORTS, POSTES, TELECOMMUNICA	23,429	35,908	40,117	44,280	37,947	45,053	51,036	53,635	54,612
150	SERVICES FINANCIERS	493	623	690	701	652	671	695	729	801
160	SERVICES D'HEBERGEMENT ET DE RESTAURATION	117	119	130	137	149	157	163	194	202
170	AUTRES SERVICES AUX ENTREPRISES	3,737	4,429	6,701	6,843	6,919	7,776	8,763	10,628	10,760
180	SERVICES D'ADMINISTRATION PUBLIQUE									
190	SERVICES D'EDUCATION									
200	SERVICES DE SANTE ET D'ACTION SOCIALE									
210	SERVICES COLLECTIFS, SOCIAUX ET PERSONNEL	349	427	411	431	460	483	425	440	469
220	SIFIM									
230	CORRECTION TERRITORIALE									
999	Produit en attente									
	Total	**193,324**	**216,916**	**229,012**	**245,354**	**235,961**	**260,780**	**299,868**	**294,137**	**286,438**

Table 3: Exonerations on Commodities & services constituting major sectoral branches

ID1	ID2	Commodities & services	2007	2008	2009	2010	2011	2012	2013	2014
010	010010011	Blé	0	0	0	0	0	0	0	0
010	010010012	Maïs	0	0	0	0	0	0	0	0
010	010010013	Riz paddy	1	1	1	1	1	1	1	1
010	010010014	Mil et Sorgho	0	0	0	0	0	0	0	0
010	010010015	Autres céréales	0	0	0	0	0	0	0	0
010	010010021	Igname	0	0	0	0	0	0	0	0
010	010010022	Manioc	0	0	0	0	0	0	0	0
010	010010023	Autres tubercules	0	0	0	0	0	0	0	0
010	010010031	Légumes à causse secs	0	0	0	0	0	0	0	0
010	010010032	Légumes frais et épices	0	0	0	0	0	0	0	0
010	010010041	Ananas	1	1	1	1	1	1	1	1
010	010010042	Autres fruits	1	1	1	1	1	1	1	1
010	010020000	Coton graine	1	1	1	1	1	1	1	1
010	010030001	Noix de palme	1	1	1	1	1	1	1	1
010	010030002	Arachides	1	1	1	1	1	1	1	1
010	010030003	Anacarde, cajou	1	1	1	1	1	1	1	1
010	010030004	Noix et amandes de karité	1	1	1	1	1	1	1	1
010	010030005	Canne à sucre	1	1	1	1	1	1	1	1
010	010030006	Autres produits agricoles	1	1	1	1	1	1	1	1
020	020000001	Bovins sur pied	0	0	0	0	0	0	0	0
020	020000002	Lait de vache	0	0	0	0	0	0	0	0
020	020000003	Autres animaux sur pieds	0	0	0	0	0	0	0	0
020	020000004	Volailles	0	0	0	0	0	0	0	0
020	020000005	Autres produits d'origine animale nca	1	1	1	1	1	1	1	1
020	020000006	Produits de la Chasse et services annexes	1	1	1	1	1	1	1	1
030	030010000	Produits de l'exploit. forestière et de cueillette	1	1	1	1	1	1	1	1
030	030020000	Produits de la pêche	1	1	1	1	1	1	1	1
040	040010002	Services annexes à l'extraction de pétrole et gaz	1	1	1	1	1	1	1	1
040	040020001	Produits de l'extraction de mines et carrières	1	1	1	1	1	1	1	1

040	040020002	Autres produits d'extraction	1	1	1	1	1	1	1	1
050	050010001	Produits de l'abattage des animaux	1	1	1	1	1	1	1	1
050	050010002	Viande de volaille	1	1	1	1	1	1	1	1
050	050010003	Poissons et produits de la pêche préparés	1	1	1	1	1	1	1	1
050	050020001	Huiles brute et raffinée d'arachide	1	1	1	1	1	1	1	1
050	050020002	Huiles brute et raffinée de palme et palmiste	1	1	1	1	1	1	1	1
050	050020003	Huiles brute et raffinée de coton	1	1	1	1	1	1	1	1
050	050020004	Beurre de karité	1	1	1	1	1	1	1	1
050	050020005	Autres corps gras	1	1	1	1	1	1	1	1
050	050030001	Riz décortiqué	1	1	1	1	1	1	1	1
050	050030002	Farine de blé	1	1	1	1	1	1	1	1
050	050030003	Farine, akassa et mawé de maïs	1	1	1	1	1	1	1	1
050	050030004	Farine d'igname	1	1	1	1	1	1	1	1
050	050030005	Autres farines	1	1	1	1	1	1	1	1
050	050030006	Frais d'usinage des céréales et riz	1	1	1	1	1	1	1	1
050	050030007	Aliments pour animaux (son de maïs, mil, etc..)	1	1	1	1	1	1	0	0
050	050030008	Gari, tapioca et autres produits amylacés	1	1	1	1	1	1	1	1
050	050040001	Pain, biscuits et pâtisserie	1	1	1	1	1	1	1	1
050	050040002	Pâtes alimentaires, couscous, autres prod farineux	1	1	1	1	1	1	1	1
050	050050000	Boissons	1	1	1	1	1	1	1	1
050	050060001	Produits laitiers et glaces	1	1	1	1	1	1	1	1
050	050060002	Sucre	0	0	0	0	0	0	0	0
050	050060003	Autres produits alimentaires n.c.a	1	1	1	1	1	1	1	1
050	050070000	Produits à base de tabac	1	1	1	1	1	1	1	1
060	060010001	Coton fibre	1	1	1	1	1	1	1	1
060	060010002	Graines de coton et autres produits de l'égrenage	1	1	1	1	1	1	1	1
060	060020001	Produits textiles (fils, tissus ….etc.)	1	1	1	1	1	1	1	1
060	060020002	Autres produits textiles	1	1	1	1	1	1	1	1
060	060020003	Articles d'habillement et fourrures	1	1	1	1	1	1	1	1
060	060030001	Peaux et cuirs travaillés	1	1	1	1	1	1	1	1
060	060030002	Articles de voyage et maroquinerie	1	1	1	1	1	1	1	1
060	060030003	Chaussures et articles chaussants	1	1	1	1	1	1	1	1
070	070010000	Produits pétroliers raffinés	1	1	1	1	1	1	1	1
070	070020001	Produits chimiques de base	1	1	1	1	1	1	1	1
070	070020002	Savons, parfums et produits d'entretien	1	1	1	1	1	1	1	1
070	070020003	Produits pharmaceutiques	0	0	0	0	0	0	0	0
070	070020004	Autres produits chimiques n.c.a	1	1	1	1	1	1	1	1
070	070020005	Produits en caoutchouc	1	1	1	1	1	1	1	1
070	070020006	Produits en matière plastique	1	1	1	1	1	1	1	1
080	080000001	Clinker, chaux et plâtre	1	1	1	1	1	1	1	1
080	080000002	Ciment	1	1	1	1	1	1	1	1
080	080000003	Verre, articles en verre, poterie, prod. ceramique	1	1	1	1	1	1	1	1
080	080000004	Autres mat de construction, prod miner. non metal.	1	1	1	1	1	1	1	1
090	090010001	Produits métallurgiques et pièces de fonderie	1	1	1	1	1	1	1	1
090	090010002	Eléments en métal pour la construction	1	1	1	1	1	1	1	1
090	090010003	Autres ouvrages en métaux et travail des métaux	1	1	1	1	1	1	1	1
090	090020001	Machines et matériels divers	1	1	1	1	1	1	1	1
090	090020002	Equip.,appareils de radio, tv et com., mat médical	1	1	1	1	1	1	1	1
090	090020003	Véhicules routiers	1	1	1	1	1	1	1	1
090	090020004	Autres matériels de transport	1	1	1	1	1	1	1	1
100	100010001	Produits du sciage et du rabotage du bois	1	1	1	1	1	1	1	1
100	100010002	Articles en bois, liège, vannerie et sparterie	1	1	1	1	1	1	1	1
100	100020001	Papiers, cartons, articles en papier et en carton	1	1	1	1	1	1	1	1
100	100020002	Produits édition, imprimerie, enregistrement	1	1	1	1	1	1	1	1
100	100030000	Meubles	1	1	1	1	1	1	1	1
100	100040000	Prod. manufacturiers divers et de récupération	1	1	1	1	1	1	1	1
110	110000001	Electricité	1	1	1	1	1	1	1	1
110	110000002	Eau distribuée	1	1	1	1	1	1	1	1
110	110000003	Gaz distribué et supports énergétiques	1	1	1	1	1	1	1	1
120	120000001	Préparation des sites et construction de bâtiments	1	1	1	1	1	1	1	1
120	120000002	Travaux de génie civil	1	1	1	1	1	1	1	1
120	120000003	Travaux d'installation et de finition	1	1	1	1	1	1	1	1
130	130000000	Ventes	0	0	0	0	0	0	0	0
140	140010000	Services de transports ferroviaires	1	1	1	1	1	1	1	1
140	140020000	Services de transports routiers et par conduite	1	1	1	1	1	1	1	1
140	140030001	Services de transports maritimes	1	1	1	1	1	1	1	1
140	140030002	Services de transports aériens	1	1	1	1	1	1	1	1
140	140040001	Services auxiliaires des transports	1	1	1	1	1	1	1	1
140	140040002	Services des agences de voyages	1	1	1	1	1	1	1	1
140	140050001	Services de poste et de courriers	1	1	1	1	1	1	1	1
140	140050002	Services de télecommunications	1	1	1	1	1	1	1	1
150	150000001	Services d'intermédiation monétaire et financière	1	1	1	1	1	1	1	1
150	150000002	Services d'assurance	1	1	1	1	1	1	1	1
150	150000003	Services auxiliaires financiers et d'assurance	1	1	1	1	1	1	1	1
160	160000001	Services d'hôtellerie, services d'hébergement	1	1	1	1	1	1	1	1

160	160000002	Services de restauration, des bars, cafés	1	1	1	1	1	1	1	1
170	170010000	Services de réparation	1	1	1	1	1	1	1	1
170	170020000	Services immobiliers	1	1	1	1	1	1	1	1
170	170030000	Autres services aux entreprises	1	1	1	1	1	1	1	1
180	180000001	Services d'administion publique	0	0	0	0	0	0	0	0
180	180000002	Services de Sécurité sociale	0	0	0	0	0	0	0	0
190	190000000	Services d'éducation	0	0	0	0	0	0	0	0
200	200000001	Services de santé humaine et d'action sociale	0	0	0	0	0	0	0	0
200	200000002	Services véterinaires	0	0	0	0	0	0	0	0
210	210010000	Services d'assainis. voirie et gestion des déchets	0	0	0	0	0	0	0	0
210	210020000	Services fournis par organisations associatives	0	0	0	0	0	0	0	0
210	210030000	Services récréatifs, culturels et sportifs	1	1	1	1	1	1	1	1
210	210040001	Services personnels	1	1	1	1	1	1	1	1
210	210040002	Services domestiques	1	1	1	1	1	1	1	1
230	230000000	Correction territoriale	0	0	0	0	0	0	0	0

Annex 3: Data on Burkina Faso

Table 4: VAT revenue by major sectoral branches

ID1	TVA NON DÉDUCTIBLE (mill. CFA)	2007	2008	2009	2010	2011	2012	2013
10	**Produits agricoles**	0	0	0	0	0	0	0
20	**Produits de l'élevage**	0	0	0	0	0	0	0
30	**Produits de la sylviculture - Pêche - Chasse**	0	0	0	0	0	0	0
40	**Produits de l'extraction**	53	61	72	78	94	1258	1539
50	**Produits alimentaires**	6289	7187	8480	9170	11076	13643	16686
60	**Coton, textiles et articles d'habillement**	4408	5037	5944	6428	7764	9563	11697
70	**Produits pétroliers et produits chimiques**	37596	42965	50693	54815	66207	86520	99742
80	**Verre, poteries et matérieaux pour la constru**	4603	5261	6208	6713	8108	9987	12215
90	**Produits du papier de l'édition, imprimerie,**	1791	2047	2415	2611	3154	3885	4752
100	**Ouvrages en bois et en métaux**	32714	37386	44113	47700	57614	75865	86797
110	**Electricité, gaz, eau**	5933	6780	7999	8649	10446	12867	15738
120	**Travaux de construction, travaux d'installati**	41469	47391	55915	60459	73023	95513	110011
130	**Commerce**	0	0	0	0	0	0	0
140	**Services d'hôtellerie et de restauration**	1742	1991	2349	2540	3068	3779	4622
150	**Transports, postes et télécommunications**	7695	8794	10376	11220	13551	17805	20414
160	**Services financiers**	10667	12190	14383	15553	18785	24918	28301
170	**Autres services marchands**	2694	3079	3633	3928	4744	5843	7147
180	**Services publics**	1356	1550	1829	1978	2389	2943	3600
190	**Correspondance de la branche SIFIM**	0	0	0	0	0	0	0
200	**Correction territoriale**	0	0	0	0	0	0	0
999	**Produit d'attente de niveau 1**	0	0	0	0	0	0	0
	Total	**159010**	**181719**	**214409**	**231842**	**280023**	**364389**	**423261**

Table 5: Exonerations on Commodities & services constituting major sectoral branches

ID1	ID2	Commodities & services	2007	2008	2009	2011	2012	2013
010	010010001	Céréales	0	0	0	0	0	0
010	010010002	Tubercules	0	0	0	0	0	0
010	010010003	Fruits,légumes et autres produits	0	0	0	0	0	0
010	010020001	Coton graine	0	0	0	0	0	0
010	010020002	Autres cultures de rente	0	0	0	0	0	0
020	020000001	Bovins	0	0	0	0	0	0
020	020000002	Ovins et caprins	0	0	0	0	0	0
020	020000003	Autres animaux et autres produits de l'élevage	0	0	0	0	0	0
030	030010000	Bois et gibier	0	0	0	0	0	0
030	030020000	Poissons frais et autres produits de la pêche	0	0	0	0	0	0
040	040000001	Or	0	0	0	0	1	1
040	040000002	Autres produits de l'extraction	1	1	1	1	1	1
050	050010001	Prod. de l'abatt., transfor. et cons. des viandes	1	1	1	1	1	1
050	050010002	Prod. de transfor. et de conser. des poissons	1	1	1	1	1	1
050	050020000	Huiles et autres corps gras alimentaires	0	0	0	0	0	0
050	050030001	Produits du travail des grains, produits amylacés	1	1	1	1	1	1
050	050030002	Pain,pâtes alimentaires,produits farineux et pâtisseries	0	0	0	0	0	0
050	050030003	Sucre, confiseries, chocolaterie, café et thé	0	0	0	0	0	0
050	050040001	Produits à base de fruits et légumes	0	0	0	0	0	0
050	050040002	Produits laitiers et crèmes glacées	1	1	1	1	1	1
050	050040003	Condiments et assaisonnements	0	0	0	0	0	0
050	050050001	Boissons	1	1	1	1	1	1
050	050050002	Tabacs	1	1	1	1	1	1
060	060010001	Coton fibre	0	0	0	0	0	0
060	060010002	Graine de coton	0	0	0	0	0	0
060	060020001	Fils, tissus et autres articles textiles	1	1	1	1	1	1
060	060020002	Articles d'habillement	1	1	1	1	1	1
070	070010000	Produits pétroliers raffinés et dérivés	1	1	1	1	1	1
070	070020001	Savons, parfums et produits d'entretien	1	1	1	1	1	1
070	070020002	Produits pharmaceutiques	0	0	0	0	0	0
070	070020003	Autres produits chimiques	1	1	1	1	1	1
070	070030000	Produits en caoutchoux ou en plastine	1	1	1	1	1	1
080	080000001	Ciment	1	1	1	1	1	1
080	080000002	Verre, poteries et autres matériaux pour la construction	1	1	1	1	1	1
090	090000000	Produits du papier de l'édition, imprimerie, enregistrement	1	1	1	1	1	1
100	100010000	Produit du bois et de la vannerie	1	1	1	1	1	1
100	100020000	Produits métallurgiques; Ouvrages en métaux	1	1	1	1	1	1
100	100030000	Machines et équipements	1	1	1	1	1	1
100	100040000	Matériels de transport	1	1	1	1	1	1
100	100050000	Matelas et meubles	0	0	0	0	0	0

110	110010000	Electricité et gaz, supports énergétiques	1	1	1	1	1	1
110	110020000	Eau distribuée	1	1	1	1	1	1
120	120000001	Travaux de construction de bâtiments	1	1	1	1	1	1
120	120000002	Travaux de génie civil et autres	1	1	1	1	1	1
120	120000003	Travaux d'installation et de finition	1	1	1	1	1	1
130	130000001	Ventes de véhicules et accessoires	0	0	0	0	0	0
130	130000002	Ventes de produits pharmaceutiques	0	0	0	0	0	0
130	130000003	Ventes de produits pétroliers	0	0	0	0	0	0
130	130000004	Ventes de produits alimentaires et divers	0	0	0	0	0	0
140	140000000	Services d'hôtellerie et de restauration	1	1	1	1	1	1
150	150010001	Services de transports	1	1	1	1	1	1
150	150010002	Services auxiliaires des transports	0	0	0	0	0	0
150	150020000	Services des postes et télécommunications	1	1	1	1	1	1
160	160010000	Services d'intermédiation financière	1	1	1	1	1	1
160	160020001	Services d'assurance	1	1	1	1	1	1
160	160020002	Services d'auxiliaires financiers	0	0	0	0	0	0
170	170010001	Services personnels de réparation et d'entretien	0	0	0	0	0	0
170	170020000	Services immobiliers	0	0	0	0	0	0
170	170030000	Services fournis aux entreprises	1	1	1	1	1	1
180	180010000	Services d'administration publique	0	0	0	0	0	0
180	180020000	Services d'éducation	0	0	0	0	0	0
180	180030001	Services de santé humaine et d'action sociale	0	0	0	0	0	0
180	180030002	Services vétérimaires	0	0	0	0	0	0
180	180040001	Services assainissement voirie et gestion des déchets	0	0	0	0	0	0
180	180040002	Services fournis par les organisat. associatives	0	0	0	0	0	0
180	180040003	Services récréatifs, culturels et sportifs	1	1	1	1	1	1
180	180040004	Autres services collectifs ou personnels	0	0	0	0	0	0
190	190000000	Correspondance de la branche SIFIM	0	0	0	0	0	0
200	200000000	Correction territoriale	0	0	0	0	0	0
999	999999999	Produit d'attente de niveau 3	0	0	0	0	0	0