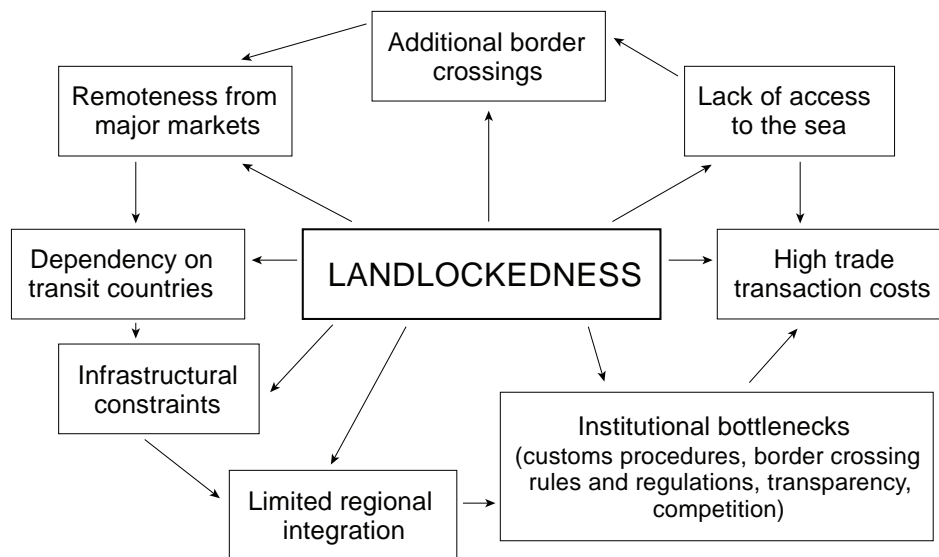UN-OHRLLS

THE DEVELOPMENT ECONOMICS OF LANDLOCKEDNESS:

United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States (UN-OHRLLS)

THE DEVELOPMENT ECONOMICS OF LANDLOCKEDNESS:

Understanding the development costs of being landlocked

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                          ┌──────────────────┐
                          │ Additional border│
          ┌──────────────→│    crossings     │←─────────────┐
          │               └──────────────────┘              │
  ┌──────────────────┐           ↑                  ┌──────────────────┐
  │ Remoteness from  │           │                  │  Lack of access  │
  │  major markets   │           │                  │   to the sea     │
  └──────────────────┘           │                  └──────────────────┘
          │          ↖           │           ↗               │
          ↓           ╲          │          ╱                ↓
  ┌──────────────────┐ ┌──────────────────────┐   ┌──────────────────┐
  │  Dependency on   │←│   LANDLOCKEDNESS      │→  │   High trade     │
  │ transit countries│ └──────────────────────┘   │ transaction costs│
  └──────────────────┘    ╱      │      ╲          └──────────────────┘
          │              ↙       │       ↘                   ↑
          ↓       ┌──────────────────────────────────────┐  │
  ┌──────────────┐│         Institutional bottlenecks     │  │
  │Infrastructural││   (customs procedures, border crossing│  │
  │ constraints  ││   rules and regulations, transparency,│──┘
  └──────────────┘│            competition)                │
          │       └──────────────────────────────────────┘
          ↓       ┌──────────────┐
  ┌──────────────┐│Limited regional│
  │              │→│ integration  │→
  └──────────────┘└──────────────┘
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e biggest challenge of LLDCs is trading with a third country … while bi-lateral trade is important most LLDCs can only trade with a third country after having its goods transit through a neighbouring country to a port with additional border crossings. As a result, the impact on trade is big.

Gravity models of bilateral trade broadly support this view (see, inter alia, Limao and Venables, 2001; Rose, 2002; Raballand, 2003; Martinez-Zarzoso and Marquez-Ramos, 2005; Coulibaly and Fontagne, 2006) e underlying intuition is pretty straightforward. Transport routes are more expensive and costs for LLDCs. is increases transport costs, thus making trade more costly and less for the parties involved. In this regard, it is immediately obvious that if trade or economic integration is a fundamental cause of development, then landlockedness is likely to adversely a ect development by making trade more di
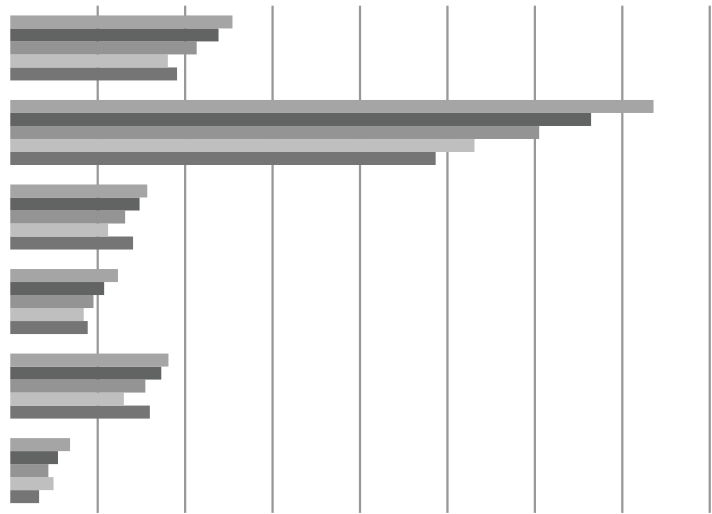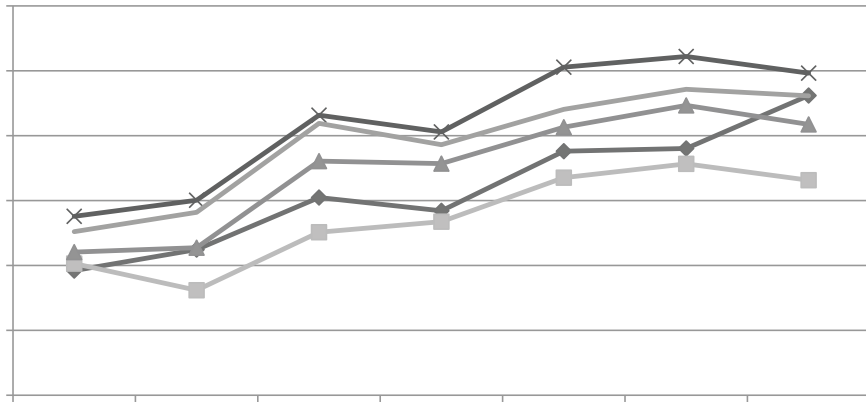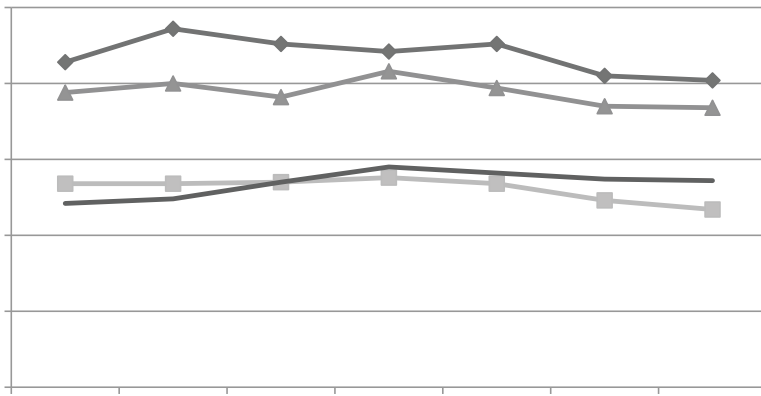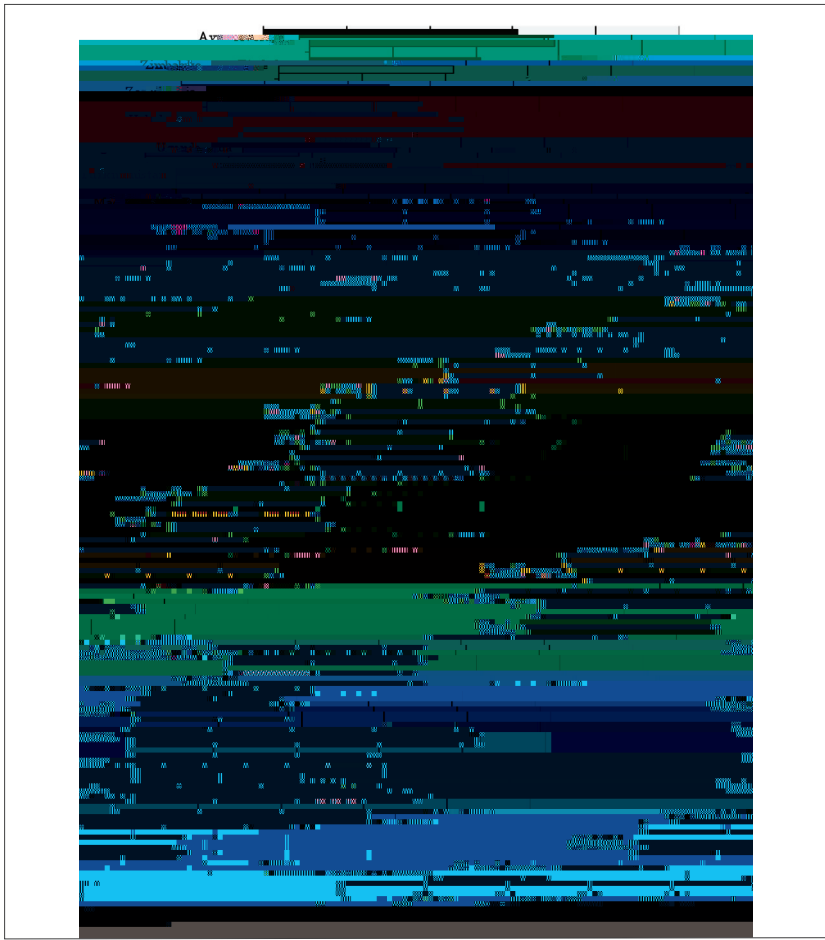

Table 4. Structural breaks associated with the launch of the APoA			
Manufacturing share	15.72	-4.49	0.010
Exports concentration	0.419	0.018	0.356
Primary commodity exports	81.14	-11.45	0.143
Export dependency	31.22	5.51	0.071
Import dependency	33.45	10.26	0.031
Service share	49.13	3.14	0.113

Source: OHRLLS Calculations.

Stylized fact 2: When measured as a proportion of GDP, international trade ows in LLDCs are not systematically smaller than in other groups. However, the export structure of LLDCs is generally less diverse and they tend to rely on the export of primary commodities more heavily than any other group. To some extent, this lack of export diversication associated

Table 5. Days to export							
Landlocked developing	49	49	48	48	46	44	43
Transit developing	30	27	26	25	24	23	23
All developing	32	30	29	28	27	26	26
World	28	26	25	25	24	23	23

Source: World Bank, Doing Business Report 2012

On the positive side, however, one should note the reduction in export delays. In all groups the time to export has declined since 2005 by 5 to 7 days. LLDCs are no exception (the reduction is 6 days), which suggests that at least in terms of overall trend they have improved. However, the LLDCs still take almost double the number of days that transit developing countries take.

Table 8. E ciency of customs clearance procedures (1=low to 5-high)		
	2007	2010
Landlocked developing	2.02815	2.17960
Transit developing	2.44091	2.37824
All developing	2.30641	2.33817
Developed	3.21081	3.21341
World	2.55134	2.58864

Source: World Bank, World Development Indicators

| Table 9. Ease of arranging competitively priced shipment (1=low to 5=high)		
	2007	2010
Landlocked developing	2.23370	2.59480
Transit developing	2.58909	2.67941
All developing	2.49205	2.69167
Developed	3.22341	3.34126
World	2.71221	2.84006

Source: World Bank, World Development Indicators

Table

Indicators	Interpretation/De

| Table 12. Share of women in non-agricultural sector (% of total non-agricultural employment)							
	1990	1995	2000	2005	2007	2008	2009
Landlocked developing	22.90	32.61	38.06	40.59	40.81	42.66	43.67
Transit developing	28.82	31.29	32.34	30.78	34.09	32.21	39.86
All developing	30.14	36.47	36.80	38.54	38.11	37.99	40.38
Developed	37.23	43.8	44.12	47.32	47.91	42.15	43.13
World	35.22	39.45	39.54	41.25	41.18	41.36	44.08

Source: United Nations Statistical Database

Similarly, youth literacy in LLDCs is higher than in transit countries, even though it still lower than in coastal developing countries and below the average for all developing countries. ratio of girls to boys in primary is also higher in LLDCs than in transit countries, albeit only marginally.

Figure 17. Youth literacy rate (% of population ages 15-24)
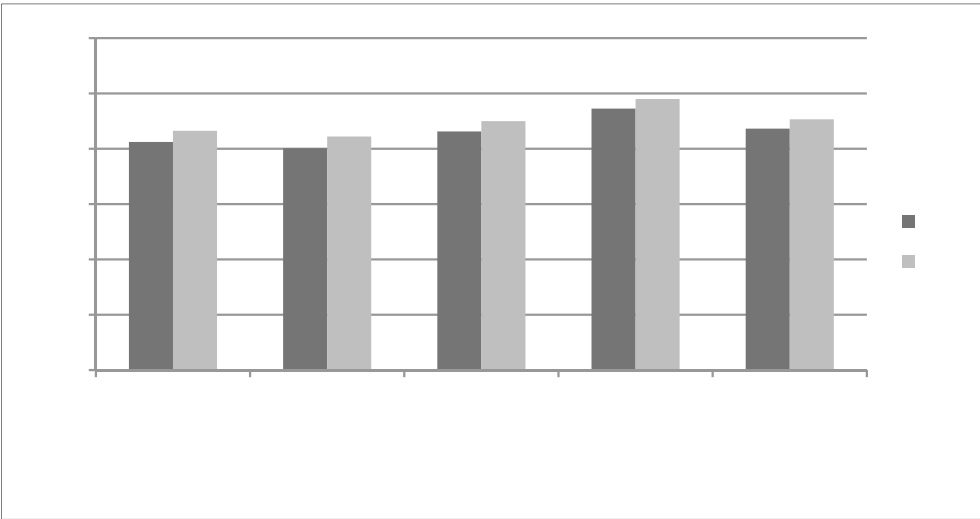
Source: United Nations Statistical Database

Indicators of health outcomes provide instead a more negative picture. LLDCs still have the highest rate of infant and maternal mortality and the highest prevalence of HIV in the population. In spite of the rapid decline in the last twenty years, infant mortality in LLDCs remains above 5%, whilst it is 3% in the coastal developing economies and around 3.5% in the average developing countries. Maternal mortality in LLDCs is almost 80% higher than in coastal economy and almost 20% higher than in transit economies. For HIV prevalence there is no evidence of the gap between LLDCs and other regions closing down.
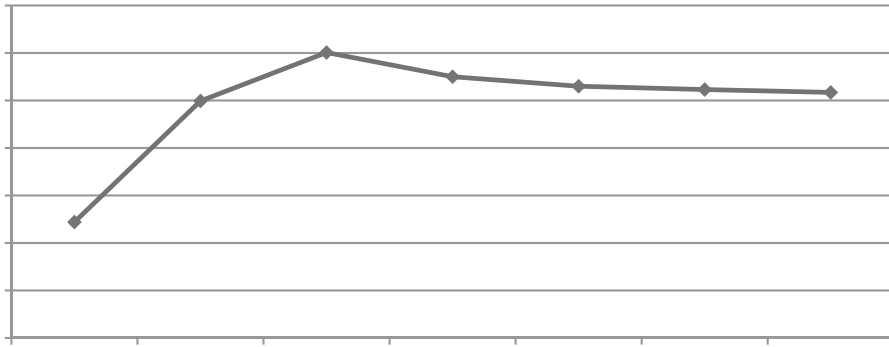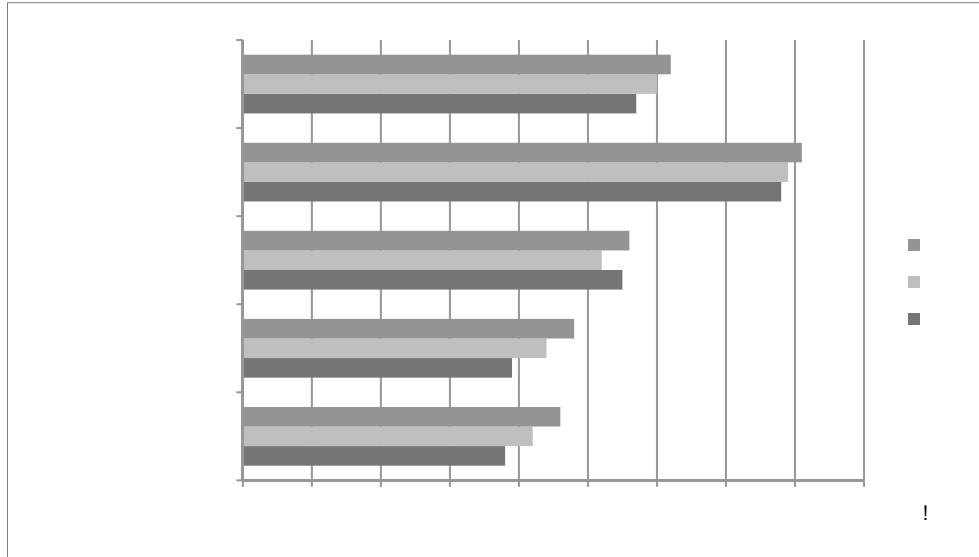
Source: United Nations Development Programme.

Table 14 indicates that human development indicators generally improved in the period following the launch of APoA. is is clearly in line with what is observed in regard to macroeconomic performance (and the same caution must be used before interpreting these ndings as indicative of a causality ect).

Table 14. Structural breaks in human development associated with APoA launch			
	mean before event (𝜇)	change in means (𝛿)	p-value
Girls/Boys primary education	83.34	7.25	0.235
Share of women outside agriculture	33.65	4.59	0.142
Youth literacy rate	81.31	5.62	0.319
Poverty headcount	47.31	-10.13	0.055
Infant mortality	79.92	-23.16	0.001
Maternal mortality	515.34	-100.13	0.003
Prevalence of HIV	5.03	0.55	0.654

Source: OHRLLS Calculations.

Stylized fact 5: Landlocked developing countries tend to have worse health outcomes and higher poverty headcount th other groups. However, in terms of gender parity and youth literacy, some progress has been achieved since 2000 and the LLDCs today perform better than the transit countries. Overall human development is still lower in LLDCs than in th average developing country period after the launch of APoA is characterised by an increase in the average of many of th human development indicators.

Table 15. Control of corruption							
Landlocked developing	-0.658	-0.684	-0.752	-0.685	-0.665	-0.679	-0.662
Transit developing	-0.392	-0.429	-0.529	-0.493	-0.468	-0.522	-0.522
All developing	-0.411	-0.415	-0.385	-0.388	-0.371	-0.369	-0.366
World	-0.020	-0.033	-0.032	-0.032	-0.027	-0.020	-0.021

Source: World Bank Governance Indicators Database

Table 16. Government œctiveness							
Landlocked developing	-0.791	-0.737	-0.773	-0.720	-0.704	-0.688	-0.673
Transit developing	-0.367	-0.429	-0.475	-0.466	-0.465	-0.499	-0.501
All developing	-0.410	-0.410	-0.401	-0.391	-0.387	-0.381	-0.383
World	-0.020	-0.035	-0.034	-0.028	-0.027	-0.020	-0.020

Source: World Bank Governance Indicators Database

Table 17. Political Stability							
Landlocked developing	-0.550	-0.658	-0.653	-0.565	-0.515	-0.518	-0.538
Transit developing	-0.638	-0.688	-0.690	-0.721	-0.668	-0.696	-0.721
All developing	-0.365	-0.367	-0.268	-0.268	-0.259	-0.261	-0.273
World	-0.097	-0.092	-0.030	-0.029	-0.026	-0.037	-0.043

Source: World Bank Governance Indicators Database
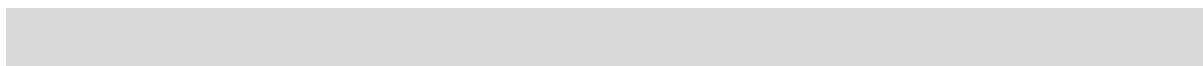
Table 19. Rule of law							
Landlocked developing	-0.733	-0.766	-0.773	-0.766	-0.740	-0.756	-0.755
Transit developing	-0.543	-0.508	-0.611	-0.618	-0.599	-0.604	-0.587
All developing	-0.426	-0.413	-0.390	-0.391	-0.387	-0.396	-0.398
World	-0.052	-0.064	-0.041	-0.035	-0.029	-0.026	-0.026

Source: World Bank Governance Indicators Database

e data tell a pretty consistent story: the quality of governance in LLDCs is lower than in the other groups. Transit developing countries however present levels of governance quality relatively close to those of LLDCs and in one case, political stability and violence, even lower.

In order to assess the quantitative signce of the dierences in the level of the indicators, consider that the theoretical range is 5 points, but in practice indicators take values in a range of about 3.8 points, with a standard deviation not greater than 1. So a dierence of 0.4 … 0.5, as it is often observed between LLDCs and coastal developing economies, corresponds to about 15% of the actual range of the indicators or to about half a standard deviation, the erences might not be too large, but they are likely to be economically meaningful.

e structural break analysis in Table 20 suggests that there is no signierence between the period before and after the launch of the APoA in most of the governance indicators, rule of law might have mildly worsened.

Table 20. Structural breaks in Governance indicators associated with APoA launch			
Voice and accountability	-0.772	0.03	0.317
Control of corruption	-0.662	-0.05	0.445
Government eectiveness	-0.808	-0.011	0.412
Political Stability	-0.553	0.023	0.275
Regulatory Quality	-0.723	-0.014	0.402
Rule of law	-0.731	-0.030	0.021

Source: OHRLLS Calculations.

Stylized fact 6: Landlocked developing countries are generally characterized by lower quality of governance than the other regi However, while the gap with respect to coastal economies is quite evident, from the transit economies is small.
In fact, on the political stability dimension of governance, transit countries appear to perform slightly worse than the LLDCs.

Population aected by natural disasters	Proportion of total population ácted by droughts, oods, and extreme temperature. Higher values indicate that a country is more vulnerable to natural disasters.
Organic water pollutant emissions	Volume of water pollutant emissions, Most data.

Table 23. Population aected by droughts, oods, extreme temperature (%)	
Landlocked developing	2.185
Transit developing	2.205
All developing	1.423
World	1.170

 e data on forest land reveal that LLDCs have the highest rate of forest depletion: -11.6% since 1990, act signi cantly higher than the depletion rate observed in transit developing economies (e 35%) age worldwide is close to 0 (-0.9%), con

Table 29. Structural breaks in international capital flows associated with APoA launch			
FDI inflows	2.31	2.17	0.001
ODA	11.32	-0.97	0.665
ODA for trade (% of total ODA)	0.44	0.01	0.555

Source: OHRLLS Calculations.

Stylized fact 8: Landlocked developing countries receive little FDI, but this in line with the experience of most other developing countries, landlocked or coastal. Yet there is evidence of an increase in capital flows after 2003. LLDCs also receive more al

Table 32. Intra regional-trade (average per country % of total country trade)		
Landlocked developing	18.12	19.23
Transit developing	4.37	4.35
All developing	11.27	12.34
Developed	13.45	15.75
World	12.10	13.10

Source: WTO, UNCTAD, IMF Direction of Trade Statistics.

Interestingly, the proportion of intra-regional trade is very high for LLDCs relative to the other developing countries groups. is might be a reason of concern to the extent that these high levels of trade are the result of trade diversion rather than trade creation. In other words, while for transit developing and developing countries regional integration might create trade, it is possible that for LLDCs trade is simply being diverted: trade partners outside the region are replaced with trade partners inside the region. To strengthen the positive development impact of regional integration it is necessary that LLDCs participate in RIAs that combine both internal free trade with custom unions with low tari barriers.

Following the launch of APoA in 2003 shown in table 33, the number of FTAs has significantly increased, while the same is not observed for the number of RIAs beyond FTAs and for the overall share of intra-regional trade.

Table 33. Structural breaks associated with APoA launch for regional integration			
Number of FTAs	2.53	0.86	0.031
Number of RIAs	1.51	0.21	0.334
Intra-regional trade	17.87	2.13	0.132

Source: OHRLLS Calculations

Stylized fact 9. FTAs and RIAs are slightly less frequent in LLDCs than in the other developing countries are of intra-regional trade is instead quite large, which might be a reason of concern in view of possible trade diversion.

$$w_{ij} = m \pm Ad_{ij} \pm c_i$$

$$y_{i,t} = \alpha + \beta l_{i,t} + \varepsilon_{i,t}$$

$$(4) y_{i,t} = \mathbf{a}' \mathbf{x}_{i,t} + \gamma_1 z_{1i,t} + \gamma_2 z_{2i,t} + \cdots + \gamma_J z_{ji,t} + \beta^l_{i,t} + \varepsilon_{i,t}$$

$$z_{1i,t} = \mathbf{b}_1' \mathbf{w}_{1i,t} + b_1 l_{i,t} + \mu_{1i,t}$$

$$\cdots$$
$$\cdots$$
$$\cdots$$

Annex 6. Definition, sources, and summary statistics of variables used in system estimation						
Development	Composite index of development obtained as the first principal components of individual MDG indicators (see Appendix I for a list)	Own computations based on UNSD and WDI data	5.07	2.13	3.23	1.21
Income	Real per-capita income in Purchasing Power Parity US dollars (variable is log-transformed for systems estimation)	Penn World Tables	2951	4381	570	563
Institutions	Average of governance indicators: (i) voice and accountability, (ii) political stability, (iii) government effectiveness, (iv) regulatory quality, (v) control of corruption, and (vi) rule of law	Kaufman et al (2010)	4.93	1.49	4.16	1.29
Integration	Index of economic integration measured as total exports + total imports divided by GDP	WDI	0.82	0.44	0.72	0.38
Landlocked	Dummy variable taking value 1 if country is landlocked	UNOHRLLS	0.17	0.37	1	0
Resources	Exports of primary commodities in percent of total merchandise exports. Primary commodities include: oil and fuels, metals and ores, agricultural raw materials, food and beverages	WDI	0.59	0.31	0.71	0.23
Latitude	Distance from the equator	La Porta et al (1999)	0.24	0.17	0.25	0.15
Population	Log of total country's population (in millions) (variable is log-transformed for system estimation)	UNSD	30.34	123.72	9.31	10.90
Area	Log of total country's land area (in Km2) (variable is log-transformed for system estimation)	UNSD	287085	856038	224758	192152

Notes: UNSD stands for United Nations Statistical Division, WDI stands for World Development Indicators (World Bank), UNOHRLLS stands for United Nations Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries, and Small Island Developing States.

Annex 8. System estimates								
Constant (a0)	-2.248	***	-3.123	***	-2.239	***	-3.142	**
Latitude (a1)	-0.099	*	-0.092		-0.077	*	-0.121	
Income (a2)	0.957	***	1.117	***	1.153	***	1.217	***
Institutions (a3)	0.156	**	0.293	**	0.149	*	0.171	**
Integration/Trade (a4)	0.634	***	0.510	*	0.317	*	0.512	**
Landlockedness (beta)	-0.573	***	-0.502	**	-0.614	**	-0.834	**
R2	0.674		0.604		..		..	

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Annex 10. e development cost of being landlocked			
Afghanistan	..	Malawi	24.95
Armenia	9.34	Mali	26.37
Azerbaijan	11.24	Moldova	18.76
Bhutan	13.19	Mongolia	15.08
Bolivia	16.10	Nepal	16.68
Botswana	24.15	Niger	27.58
Burkina	23.05	Paraguay	10.94
Burundi	29.04	Rwanda	27.10
CAR	31.63	Swaziland	16.28
Chad	30.71	Tajikistan	29.52
Ethiopia	32.53	Turkmenistan	25.24
Kazakhstan	13.76	Uganda	20.55
Kyrygz rep	21.02	Uzbekistan	15.87
Lao	24.12	Zambia	27.44
Lesotho	28.68	Zimbabwe	31.00
Macedonia	..	Average all countries	22.12